Optivity Telephony Manager

Alarm Management

User Guide

Document Number: P0910103
Document Release: Standard 1.0
Date: July 2000

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Printed in the United States of America

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Revision history

Date	Document Version	Product Release
July 2000	Standard 1.0	1.0

Contents

Introduction 13
Alarm management components 13
Alarm management configurations 15
System and device level 16
Site level 17
Network level 17
Optivity NMS InfoCenter 18
Conventions used in this guide 19

Alarm Browser 21

Meridian 1 Alarm Management 23
Text Handler 23
Alarm Banner 23
Launching the Alarm Banner 24
Alarm Banner notifications 25
Event Monitor window 25
Using the Event Monitor window 25
Launching the Event Monitor window 26
Using the Events toolbar 27
Using the Filter toolbar 27
Sorting the event list 27
Getting details on an alarm 28
Using shortcuts 28
Alarm descriptions 29
Event Monitor window menus 29

Determining the cause of an alarm 30
Acknowledging an alarm that you plan to clear 30
Marking an alarm as cleared 31
Getting details about an alarm 31
Changing alarm severity or escalation 32
Viewing the Event Default Table 32
Creating and customizing Event Preferences 33
Creating an Event Preference definition 35
Configuring alarms on the Meridian 1 36
Enable Meridian 1 alarms with Overlay 117 36
Determine the OTM PC IP address 37
Alarm notification 39
OTM alarm notification process 39
Setting up alarm notification 41
Install Alarm Notification control files 41
Using the application 51
Events processing 52
Viewing events properties 52
Scripting 53
Data types 54
Operators 55
Notifications 56
Notification types 56
Rules 63
Comments 63
Functions 63
Script Wizard 64
Step 1: Define the Notifications 66
Step 2: Define the Rules 68
Step 3: Generate the Script File 71
Sample Alarm Notification Scripts 72
Log file 72
Numeric pager 72
Alphanumeric pager 72

Severity code descriptions 72
Specific system events 74
Combining scripts 75
Scripting notes 75

Control files included with alarm notification . . . 77

The devices file 77
The configuration file 78
The scripts file 84

List of figures

Figure 1
OTM alarm management main components 15

Figure 2
Site alarms 17

Figure 3
Network alarms 18

Figure 4
Alarm Browser page 22

Figure 5
Alarm Banner window 24

Figure 6
Event Monitor window 26

Figure 7
Events Toolbar 27

Figure 8
Filter toolbar 27

Figure 9
A portion of the Event Default Table window 33

Figure 10
Event Preferences window 34

Figure 11
Event Preference Properties sheet 35

Figure 12
Overview of Alarm Notification 40

Figure 13
Welcome to Alarm Notification window 42

Figure 14
Help for setting up control files 43

Figure 15
Alarm Notification Run Options window, Control Files tab 45

Figure 16
Alarm Notification window 51

Figure 17
Event Properties window 53

Figure 18
Alarm Script Wizard 64

Figure 19
Select scripts file screen 65

Figure 20
Main Script Wizard screen 66

Figure 21
E-Mail Notification Definition screen 67

Figure 22
Define Condition screen 68

Figure 23
Define Action If True screen 69

Figure 24
E-mail notification details 70

Figure 25
Define Actions If False 71

List of tables

Table 1
Columns in the Event Monitor window 29

Table 2
Operators 55

Table 3
Notification types 56

Introduction

OTM alarm management provides an alarm collection and processing center for multiple systems and devices. OTM receives SNMP traps from systems, such as the Meridian 1 and Call Pilot, and stores them in a circular log file on the OTM Server. The OTM Alarm Notification application monitors the incoming traps and notifies the appropriate people of important events and alarms.

Alarm management components

OTM alarm management has the following components:

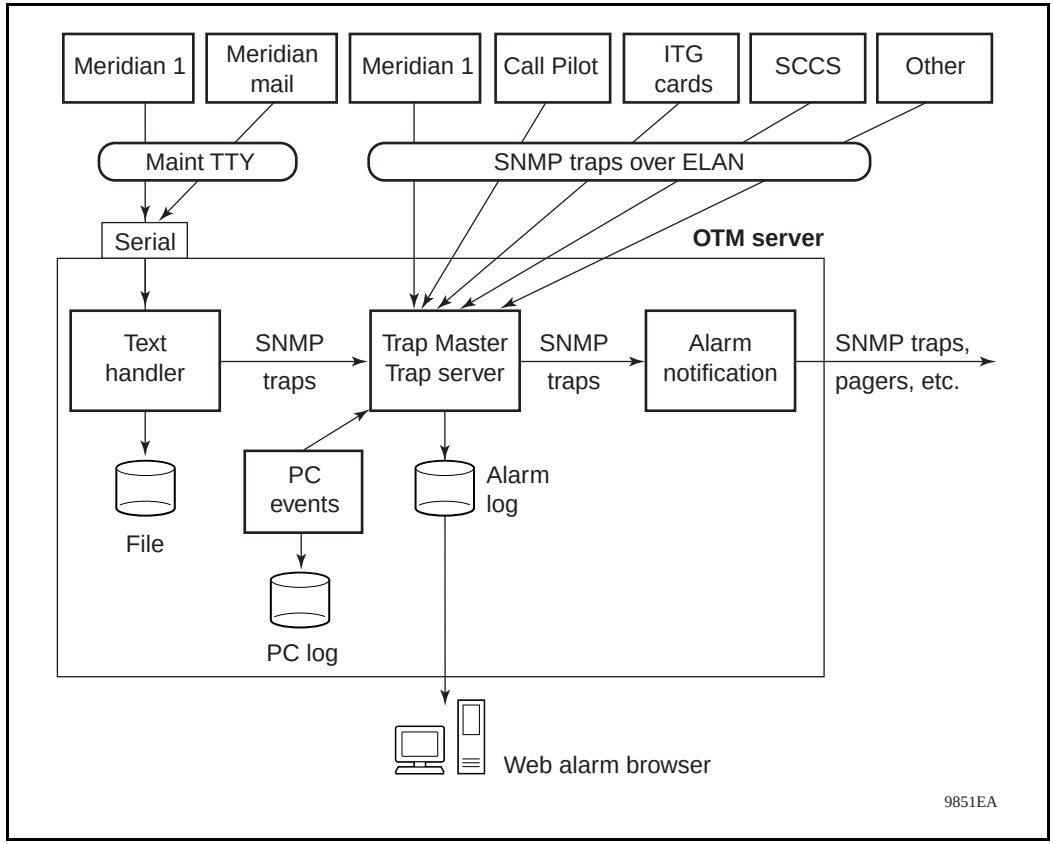
- A web alarm browser server that supports the viewing of alarms from multiple systems and devices. HTML help is provided for individual alarms.
- A Microsoft® Windows® Alarm Browser (Event Monitor) - used for viewing Meridian 1 specific alarms. Windows help is provided for individual alarms.
- An Alarm Notification application - provides a scripting language to generate notifications on selected incoming traps. Notification types include pagers, email, and the forwarding of SNMP traps to an upstream processor (such as Optivity NMS). Notification is triggered by trap data such as alarm severity, device type, and time of day. A Script Wizard application simplifies the creation of Alarm Notification scripts.
- Text Handler application - parses maintenance TTY output and generates traps on selected error messages. This is intended primarily for legacy Meridian 1s (Release 21 and earlier) and Meridian Mail systems which cannot generate traps. Text Handler rules can be created by the user to support other serial devices.

- PC Event Log and Viewer for viewing events and alarms generated on the OTM Server and all of its Windows clients. This Windows application can also generate SNMP traps based on the event severity level.

Figure 1 shows the main components of OTM alarm management. The Trap Master is responsible for handling the SNMP Traps from the systems and storing it on the server for retrieval by the Alarm Browser client. The Trap Server distributes traps to applications registered to receive traps, such as Alarm Notification.

The Trap Master and Trap Server are run as Windows NT Services on the OTM Server.

Figure 1
OTM alarm management main components



Alarm management configurations

OTM is the collection point for alarms from Meridian workgroup devices. It provides an integrated system view of these alarms. It also provides a gateway to monitor, access, and correct faults for those devices.

OTM alarm management can be configured to met the needs of different users. Typically, there are three levels of user responsibilities:

- maintaining a single system such as the Meridian 1
- maintaining multiple systems in one or more sites
- maintaining a large network of voice and data products

The following sections provide an overview of how OTM alarm management can meet the needs of these different users.

System and device level

The Meridian 1 can be configured to send SNMP traps to the OTM Server (X11 Release 22 and later). The Meridian 1 can also be configured to filter the traps being sent (e.g., only send critical alarms to OTM). The user responsible for the Meridian 1 can use the OTM Windows Alarm Browser to see all the Meridian 1 events and alarms.

The following other Meridian products can be configured to send traps to OTM. OTM can recognize these traps and provide help for individual alarms. Refer to their respective product documentation for software release and configuration procedures.

- IP Telephony Gateway (ITG)
- Call Pilot
- Symposium Call Center Server (SCCS)
- Meridian Mail 13

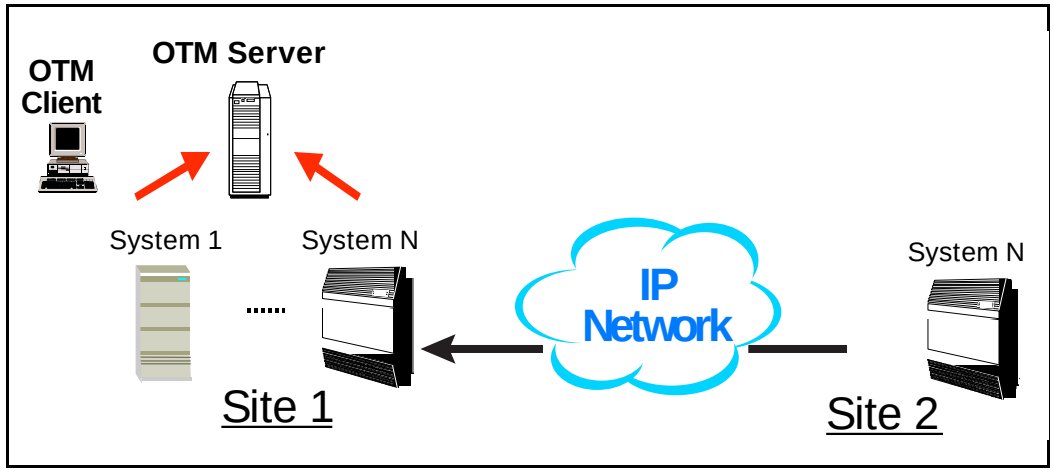
The user responsible for these devices should use the OTM Web Alarm Browser, which can display alarms from a single device.

Site level

As shown in Figure 2, OTM collects alarms from multiple devices in one or more sites. The Web Alarm Browser can be used to view all of these alarms.

Use the Alarm Notification application when critical alarms occur, to identify the notices that are sent, and to whom they are sent.

Figure 2
Site alarms



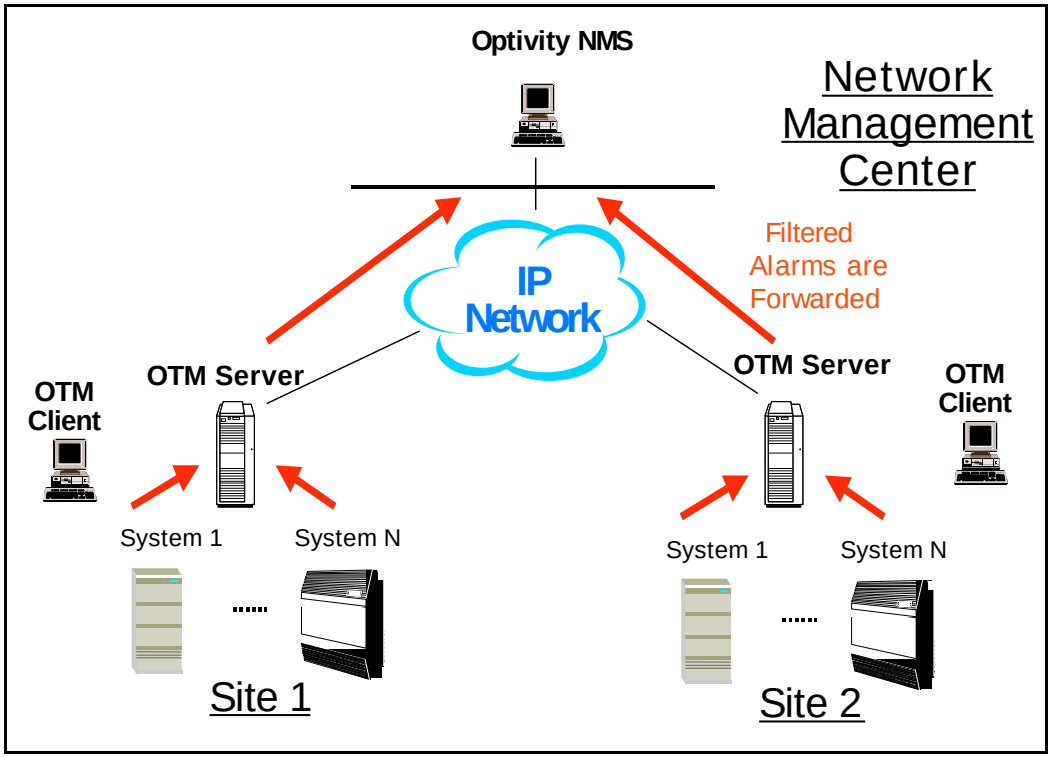
Network level

The devices represented in Optivity are OTM servers, which manage individual Meridian voice elements. The OTM servers are manually added to the Optivity network by the Optivity administrator. OTM is integrated with Optivity Campus 9.0.1 and Optivity NMS 9.0.1.

The OTM Alarm Notification application reformats, filters, and forwards traps to Optivity, as shown in Figure 3. Since OTM forms the main representative agent for Meridian 1 and related voice devices, all alarms received by Optivity result in the change of status state of OTM depicted in Optivity InfoCenter. The traps are reformatted into the open alarm II format. Typically, only critical alarms are forwarded to Optivity.

When Optivity and OTM co-reside on the same server, the OTM Trap system disables its Trap Server and instead interfaces with the Optivity Trap Server to receive traps.

Figure 3
Network alarms



Optivity NMS InfoCenter

Optivity NMS InfoCenter graphically displays internetworking device fault status in color. Using the right mouse button, you can open other Optivity NMS applications that help you identify the source of the fault.

The Optivity Telephony Manager can be configured as an object in InfoCenter, representing the Meridian 1 switches that it manages. Faults from all OTM-connected switches can be forwarded to InfoCenter and color will represent the fault status of the device.

The applications that you can open for a device depend on the settings in the Applications Launch application. (For more information on using Application Launch, see the Optivity NMS Application Launch On-Line Help system.)

Resolving faults on switches managed by an OTM server can be accomplished by launching the OTM application. This will initiate a Web Browser session with the OTM server. The Web applications available on the server can then be accessed from the OTM Web Navigator.

The Path Trace option discovers and displays the connections between resources in the network, (including physical and logical paths) and also graphically identifies faults.

The Fault Summary option displays the faults (or traps) for a single device, multiple devices, or the entire network. Based on the information provided, you can use other Optivity NMS applications to provide corrective actions.

Conventions used in this guide

This guide uses the following typographical conventions:

- User input—**This font** alerts you to information that you enter on your keyboard; or, when using your mouse, indicates which buttons to click or menu selections to make.
- Multi-lettered keys—Angle brackets denote a single multi-lettered key on your keyboard. For example, **<Esc>** denotes the Escape key, labeled **Esc** on PC keyboards.
- Key sequences—Keys that you press at the same time include at least one multi-lettered key and are not separated by spaces. For example, **<Alt>V** instructs you to press the **<Alt>** and **V** keys at the same time.
- Hot keys—You can access menu commands by using the mouse or your keyboard. A m63
- Menu item has one letter underlined. To choose a menu item from the keyboard, hold down the **<Alt>** key and press the underlined key. For example, press **<Alt>F** to open the **File** menu.
- *Windows* refers to the Microsoft family of graphical user interface (GUI)-based operating systems.

Alarm Browser

The Alarm Browser page presents a list of alarms and events from multiple systems and devices. Access the Alarm Browser page through the OTM Web Navigator.

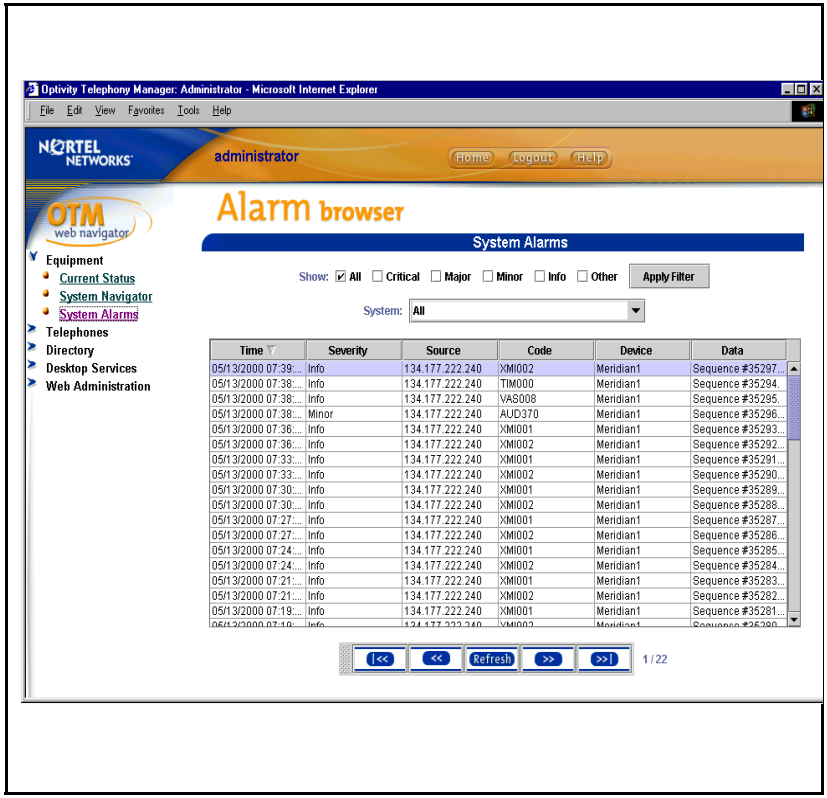
The user can perform the following actions within the Alarm Browser page:

- Use **Show** checkboxes to filter the list based on severity or system.
- Use the **First**, **Last**, **Previous**, or **Next** buttons to page through the list
- Click on a column header to sort the alarms
- Resize a column
- Double click on an alarm for help on that alarm

The list of alarms is not dynamic. The user must select the **Refresh** button to view new alarms.

The Alarm browser page is shown in Figure 4.

Figure 4
Alarm Browser page



Meridian 1 Alarm Management

Alarm management consists of a number of components that improve handling of system-generated alarms and events. Alarm management is only available for Meridian 1 systems running X11 Release 22 or later that are configured with the alarm management package (296).

Text Handler

For older Meridian 1s, you can use the Text Handler to parse maintenance TTY output and generate traps on user selected error messages. The Text Handler is intended primarily for Meridian 1 systems running X11 Release 21 and earlier and for Meridian Mail systems that cannot generate traps. Text Handler rules can be created by the user to support other serial devices. The Text Handler is a part of the Database Buffering and Access (DBA) application. Refer to the OTM Common Services User Guide for details.

Alarm Banner

System status can be determined by reviewing the history file to look for problems, and issuing a number of status commands in various overlays to look for disabled or faulty hardware. The Alarm Banner window automatically alerts you to this information in a simple, direct manner.

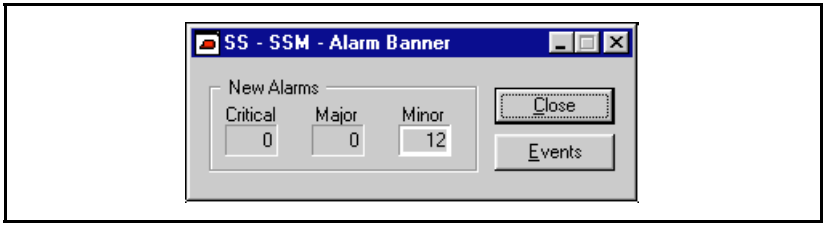
The Alarm Banner window alerts you to new critical alarms and gives you the count of all new alarms. If you wish to learn more about an alarm, press the Events button to launch the Events Monitor window. If there are no alarms, you can log out or leave the Alarm Banner displayed and go on to another task.

When a new critical alarm arrives, the system beeps if the notification option has been set, and the Alarm Banner title bar icon and Event Monitor window task bar icon flash. The flashing continues until you click anywhere in the Alarm Banner or Event Monitor window.

Launching the Alarm Banner

From the Maintenance menu of the System window, select **Alarm Banner**. Alternately, you can double-click the **Alarm Banner** icon in the System window toolbar. The Alarm Banner window appears as shown in Figure 5.

Figure 5
Alarm Banner window



The Alarm Banner keeps you informed about the current status of the system. You might typically check the current status of the system for the following reasons:

- standard operating procedure (for example, check every morning)
- investigating a suspected or reported problem
- checking and monitoring the system while performing other tasks

Alarm Banner notifications

The primary function of the Alarm Banner is to notify you when a new alarm arrives in the following ways:

- The outline of the field holding the alarm count flashes to indicate the arrival of a new critical alarm.
- The event counts in the Alarm Banner are incremented appropriately for all users.
- One or more beeps sound. This is optional. See "Creating an Event Preference definition" on page 35.

  Note: The Event Monitor window must be active for the beep to sound.

- If the Alarm Banner has been closed by the user, the sound notification is provided by the Events Monitor window. The window is not brought to the front, as this may interfere with your current task.

There is no alarm notification beep if the sound has been disabled. The count field outline still flashes and the count increments to indicate the arrival of a new alarm.

Event Monitor window

The Event Monitor window displays the Meridian 1 system's Event Log, allowing you to view all recent system alarms and events (previously stored in the Meridian 1 history file). The Event Monitor window displays active events in a way that lets you quickly view the most important events. System events with a severity of critical, major, or minor are considered alarms—alarms are events which may require some corrective action. System events with a severity of info are for informational purposes only and are not considered alarms.

Note: The Event Log is preserved during and after a sysload and initialization of a Meridian 1.

Using the Event Monitor window

Once you open the Event Monitor window, you can perform the following tasks:

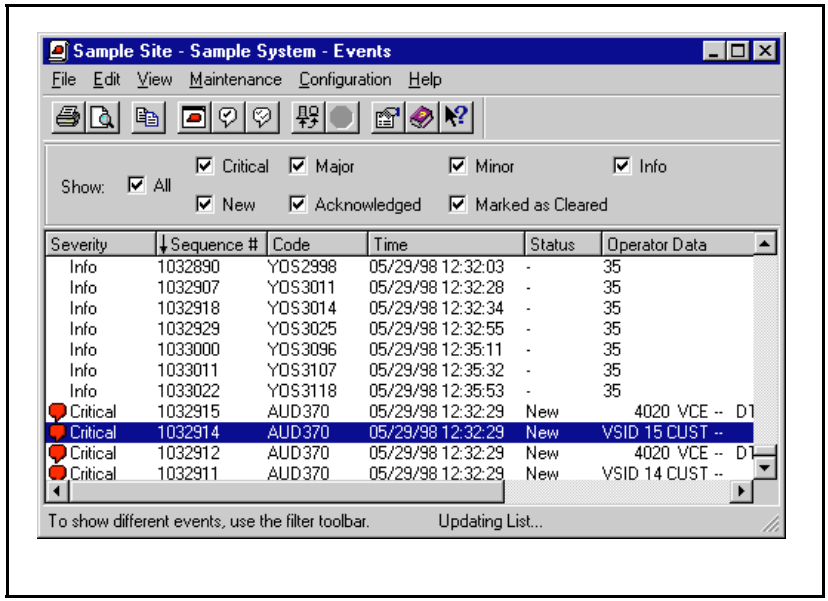
- get a description of an event

- acknowledge an alarm you intend to clear—this communicates your intention to others who may be working on the system
- locate an alarm in the Event file to identify the cause of the problem
- learn more detail about an alarm
- mark an alarm as cleared in the list after you have corrected the problem
- change system event preferences for all subsequent alarms
  - — the severity of the alarm
  - — the escalation threshold for an alarm type

Launching the Event Monitor window

From the **Maintenance** menu of the System window, select **Events**. If you are not connected to the Meridian 1, the connection login window appears. Once you have connected, the Event Monitor window appears as shown in Figure 6.

Figure 6
Event Monitor window



The Event Monitor window provides a list of events and a menu bar from which you can learn more about the events. An event remains displayed in the list until expired by the Meridian 1 system. The column headings identify and describe the events.

Using the Events toolbar

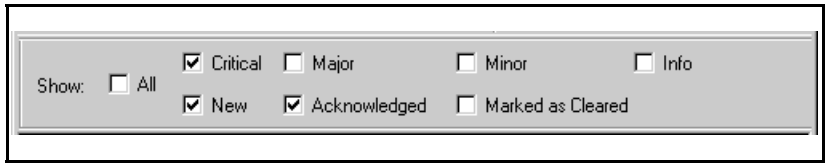
Use the Events toolbar to perform many of the commands in the Event Monitor window menus. Each button in the toolbar is documented in the **What's This** help.

Figure 7
Events Toolbar

Using the Filter toolbar

Use the Filter toolbar to select the types of alarms or events that you wish to display in the list. Figure 8 shows the Filter toolbar. Click to check (or uncheck) an item. For example, you would check **New** and **Critical** to restrict the list to alarms that are new and critical. You can drag the Filter Toolbar to the top or bottom of the window.

Figure 8
Filter toolbar



Sorting the event list

Alarms and events are listed in order of occurrence (sorted according to the Time column). You can sort the list according to another column by clicking in that column heading. This is useful for prioritizing your work when dealing with a large number of alarms.

Click to sort in ascending order; click again for descending order. An arrow in the column heading indicates the current sort column and sort order.

Getting details on an alarm

If the data does not all fit in a column, you can resize a column by dragging the column divider. You can also use **Properties** in the **File** menu to display complete information about a selected event.

Double click on an alarm, or click the **What's This** button to see reference information in Windows Help.

New critical alarms are indicated by the icon. The icon disappears when the alarm is acknowledged.

Using shortcuts

You can perform the following common tasks from the right mouse button popup menu:

- **Copy** an alarm: copies selected events to the clipboard (a temporary holding area). You can then insert the text into another document. Copy is unavailable when no text is selected.
- **Select All** alarms: selects all events in the list. You can print the selected text or copy it to the clipboard and insert it into another document.
- **Acknowledge** an alarm: changes the status of the selected alarm to Acknowledged. This informs technicians on other OTM systems that the problem is being investigated.
- **Mark as Cleared:** Changes the status of the selected alarm to Marked as Cleared. This informs users on other OTM systems that the problem is solved.
- Learn the **Properties** of an alarm: displays complete information about the selected event.
- **What's This?** general help option: Changes the cursor to a "question mark" cursor and displays help on the next item you select.

Alarm descriptions

The Event Monitor window provides several columns of information about each active alarm. You can resize a column by dragging the column divider to make more room for text. Table 1 describes each column.

Table 1
Columns in the Event Monitor window

Column	Description
Severity	The alarm severity (critical, major, or minor) or a non-alarm event (info). An icon indicates an unacknowledged critical alarm.
Sequence	All events are given a unique sequence number.
Code	A code that identifies the event. It includes the error category (for example NWS) and a five-digit error number.
Time	The date and time that the alarm occurred.
Status	Current alarm status (appears with a dash "-" for non-alarms). **New** indicates an alarm has not been acknowledged or cleared. **Acknowledged** indicates an alarm in the process of being cleared. **Marked as Cleared** indicates the alarm has been manually cleared.
Operator Data	Data produced by the equipment that generated the event. Its contents may vary. Typically, it includes a description of the event and the equipment affected (component ID information, such as the loop number or TN).

Event Monitor window menus

The Event Monitor window menu selections are designed to be fully documented in the on-line help. You can use **What's This** help for any menu item or toolbar button.

Determining the cause of an alarm

An alarm may be caused by another system event, such as a BUG message. By examining the events immediately preceding an alarm, you may be able to isolate the source of the problem. Use the scroll bar to browse through the event list. To display help on a selected alarm, double-click the alarm.

Acknowledging an alarm that you plan to clear

You can acknowledge a new alarm to inform others that you will investigate the problem and clear the alarm. Your acknowledgment appears in the **Status** field of the Event Monitor window. The events are updated for all OTM users.

> ***Note:*** Events with a status of **Info cannot be acknowledged or marked as cleared.** Alarms that have been marked as cleared cannot be acknowledged.

To acknowledge an alarm:

1 Select the desired alarm(s).

You can use the checkboxes at the top of the window to restrict the list to certain types of alarms. Use **<Shift>-click** to select a range of alarms. Use **<Ctrl>-click** to select multiple alarms. To select all alarms, choose **Select All** from the **Edit** menu.

2 Choose **Acknowledge** from the **Maintenance** menu or the menu displayed by the right mouse button.

Once you acknowledge an alarm, the Status field for all selected alarms in the Event Monitor window is marked “Acknowledged.”

Marking an alarm as cleared

After you fix a problem, you will typically mark the associated alarm as cleared. The term *Mark as Cleared* is used because clearing an alarm only indicates that the problem has been fixed—it does not actually fix the problem.

To mark alarms as cleared:

1. Select one or more alarms in the Event Monitor window. You can use the checkboxes at the bottom of the window to restrict the list to certain types of alarms. Use **<Shift>-click** to select a range of alarms. Use **<Ctrl>-click** to select multiple alarms. To select all alarms, choose **Select All** from the **Edit** menu.

   Note: You can usually save time by displaying the type of alarm of interest using the Filter bar before selecting individual alarms.

2. Select **Mark as Cleared** in the **Maintenance** menu, and click **OK** to confirm.

Acknowledging and clearing alarms is optional. You can clear alarms without first acknowledging them. If you do not clear alarms, the oldest alarms are deleted by the system when it reaches the maximum number of alarms.

> ***Note:*** It is recommended that you clear alarms as you fix problems so that the Event Monitor window accurately reflects the state of the system. Events with a status of **Info cannot be acknowledged or marked as cleared.** Alarms that have been marked as cleared cannot be acknowledged.

When you clear an alarm, the following happens:

- The Alarm Status field for all selected alarms is updated in the System Event File with “Marked as Cleared”
- The counts in the Alarm Banner are adjusted appropriately for all users.

Getting details about an alarm

You can use the following methods to learn more about selected alarms:

- Select **Properties** in the **File** menu or click the **Properties** button to see all information for the selected alarm.
- Double click on an alarm to see reference information in Windows Help.

Changing alarm severity or escalation

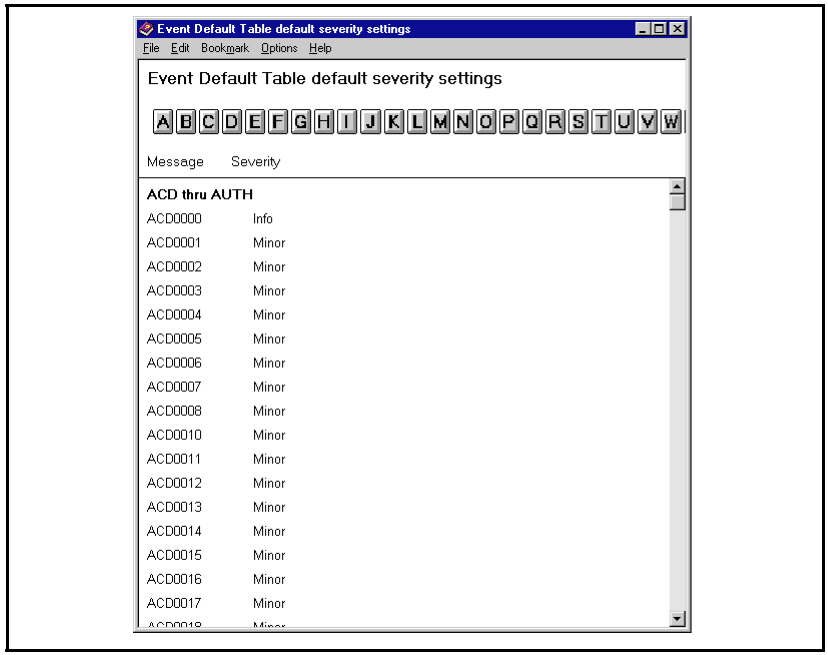
Use the **Event Preferences** command in the **Configuration** menu to specify the severity of events (critical, major, minor, or event) on a per-system basis. The system uses an Event Default Table which predefines the severity of all events. Typically, you modify these settings only when installing or upgrading the system. See “Creating and customizing Event Preferences” on page 33.

Viewing the Event Default Table

The Event Default Table contains the default severity settings of all system events. Use the table to verify default settings before adding event preferences.

To display the Event Default table, choose **Event Preferences** from the **Configuration** menu, then choose **Event Default Table** from the **Help** menu in the Event Preferences window (Figure 9).

Figure 9
A portion of the Event Default Table window



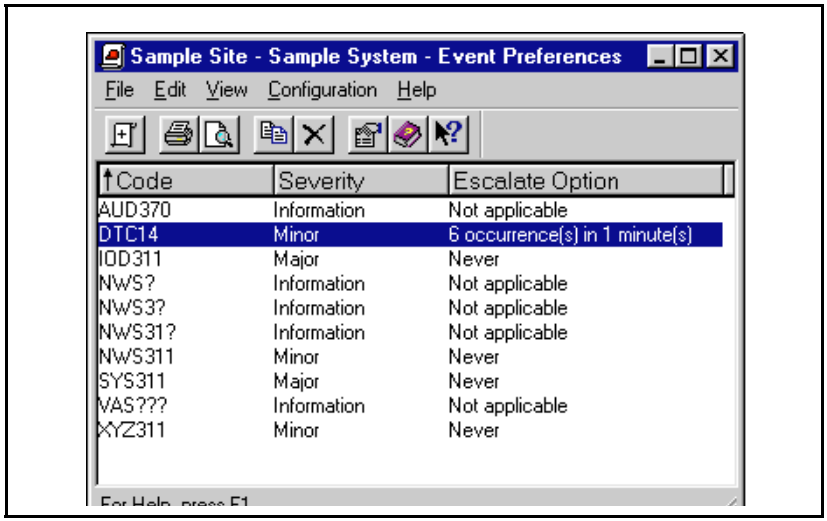
Creating and customizing Event Preferences

You can change alarm severities for this system by changing the default alarm severity and escalation threshold using the Event Preferences window. See Figure 10. The escalation setting defines the maximum number of times an event can occur within a defined period of time (the global time window) before it escalates to the next higher level of severity. For example, if you set escalation to “10 occurrences in 1 minute” for a minor alarm, the alarm will escalate to a major alarm when it occurs more that 10 times within a 1 minute period. See “Creating an Event Preference definition” on page 35 for steps describing how to set escalation parameters.

To open the Event Preferences window, select **Event Preferences** from the **Configuration** menu in the Event Monitor window.

Before changing an alarm definition, you may wish to look up the default settings in the Event Default Table. See “Viewing the Event Default Table” on page 32.

Figure 10
Event Preferences window

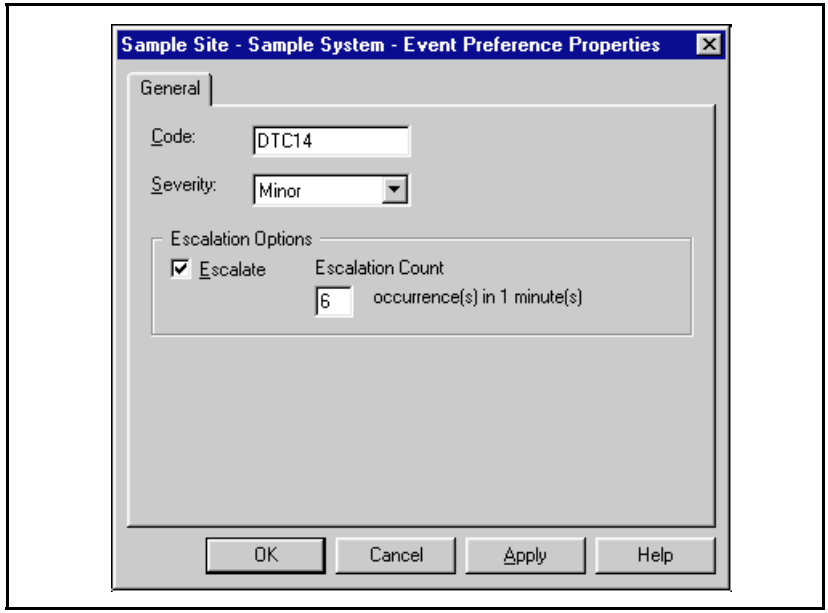


Creating an Event Preference definition

1 Choose **Event Preferences** from the **Configuration** menu—the Event Preferences window appears.

2 Choose **Add Event Preference** from the **Configuration** menu. The **Event Preference Properties** sheet appears (Figure 11).

Figure 11
Event Preference Properties sheet



3 In the **Code** field, type the alarm or event ID.

The ID includes the event category (such as **BUG**, or **NWS**) and the five-digit event number.

You may use the wildcard symbol **?** to represent a group of error code numbers. For example, **NWS3??** represents all error codes between NWS300 and NWS399.

4 To change the alarm severity, press the down arrow in the **Severity** field and choose a setting from the popup menu.

5 To change the escalation threshold, check the **Escalate** box. Type a number in the **Escalation** field.

The escalation setting defines the maximum number of times an event can occur within a defined period of time (the global time window) before it escalates to the next higher level of severity. For example, if you set escalation to “10 occurrences in 1 minute” for a minor alarm, the alarm will escalate to a major alarm when it occurs more that 10 times within a 1 minute period.

The global time window is set in the Meridian 1, and can range from 0 to 60 minutes.

6 Click **OK**.

Configuring alarms on the Meridian 1

The Event Monitor window described in this chapter displays the events stored in the Meridian 1 Event Log. In order to display the Meridian 1 events in the OTM web Alarm Browser you must enable the open alarms feature in Overlay 117. You may also want to suppress minor and informational alarms going to the OTM server.

Enable Meridian 1 alarms with Overlay 117

To enable alarms with Overlay 117:

1 Click on the System Terminal icon from the toolbar in the OTM system window. The System Terminal Selection window opens.

2 Click on the Ethernet/PPP (Overlay Passthru) radio button then click OK. The System Terminal window opens.

3 Log in with your administrator’s user name and password.

Note: You must have appropriate access privileges to use Overlay 117.

4 Load Overlay 117 by entering `ld 117` in the command line. The => prompt appears in the Command Results pane indicating the system terminal application is ready to accept your input.

5 Type `prt open_alarm` to see if other users are currently accessing the system. A list of slots currently in use is displayed. Slots are numbered from 0 through 7, for a total of eight available slots. Note the next available slot.

6 Type `set open_alarm` *`n IP_address`* where *`n`* is the next available slot number and *`IP_address`* is the IP address of your OTM Server. See “Determine the OTM PC IP address” on page 37.

Note: Assigning your IP address to a slot currently in use will disconnect that user from the system preventing them from receiving alarms information.

7 Verify the overlay has accepted your entry by typing `prt open_alarm`. The list of slots and IP addresses receiving alarms is displayed. Verify that your particular slot and IP address is included.

Note: Overlay 117 accepts abbreviations of the various commands. For example, you can type the abbreviation `prt op` instead of `prt open_alarm.`

8 Type `prt suppress and prt suppress_alarm` to see the current alarm suppression settings.

9 Type `chg suppress_alarm n` to set the alarm suppression, where *`n`* is 0 = All, 1 = Minor, 2 = Major, 3 = Critical. For example, to suppress all alarms except critical, enter 3. The suppression count is based on the Global Window Timer. To view and change the timer, use prt/`chg timer n, where n is 0-60 minutes.`

10 Type `prt suppress and prt suppress_alarm` to verify the changes.

11 Log out and close the system terminal window.

Determine the OTM PC IP address

To find your PC’s IP address:

1 From the Start button, select Settings - Control Panel. The Control Panel window opens.

2 Open the Network icon to display the tabbed dialog box. Click on the Configuration tab. A list of installed network components is presented.

3 Select the TCP/IP network component used by your PC. Depending on the number of installed components, you may have to scroll to see the correct component.

4 With the component selected, click on Properties. The TCP/IP tabbed window opens.

5. Click on the IP Address tab. Note the IP address shown. This is the IP address unique to this PC. You will enter this information in Overlay 117 to specify where the alarm event will be received.
6. Close all the control panel related windows and return to your desktop.

Alarm notification

The Alarm Notification application uses the existing OTM architecture to connect to Meridian 1 systems and other supported systems and equipment which can generate SNMP events to detect specified events. For Meridian 1 systems, the X11 SNMP Open Alarms Package (315) must be present and activated along with the packages required for OTM.

OTM alarm notification process

The Alarm Notification application receives SNMP events from designated network equipment over an Ethernet network and sends out alarm notifications when specified event conditions are detected. Received events are examined against a set of programmed rules which may activate notifications of different types. These notifications include:

- SNMP traps or events transmitted to predefined destinations
- text notification over a modem
- pager notification to alpha or numeric pagers
- electronic mail using Simple Mail Transfer Protocol (SMTP)
- log

  Note: The log is not an alarm notification but is included because it describes system events.

SNMP events are displayed at the OTM PC in the Alarm Notification window. You can also view events with a web browser connected to a configured web server. When the application starts, three application control files are loaded: a devices file, a configuration file, and a scripts file.

> ***Note:*** These control files must be present and configured for the Alarm Notification application to work correctly. See "Setting up alarm notification" on page 41.

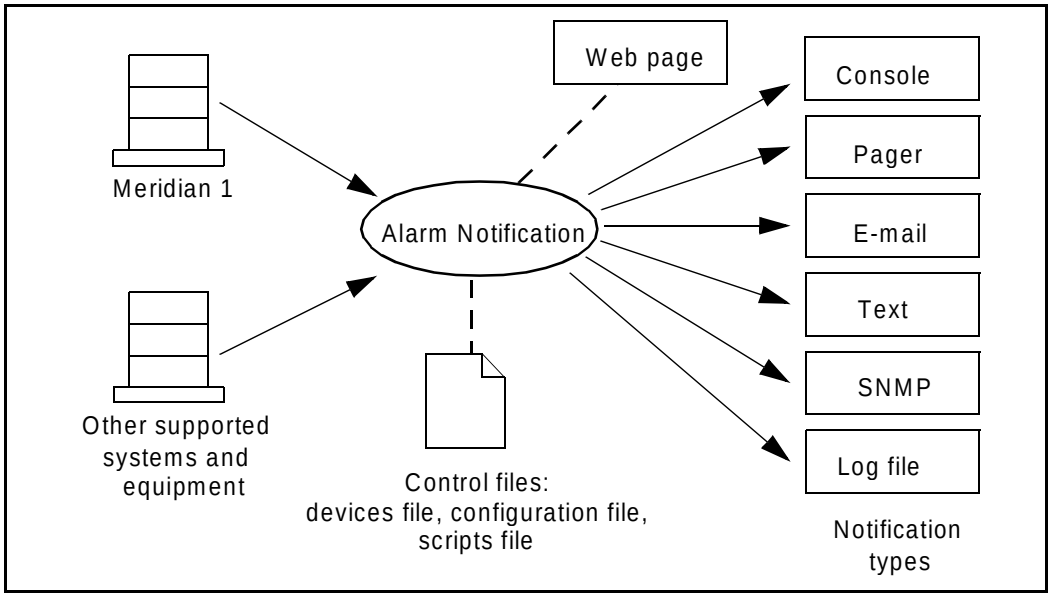
The devices file specifies the SNMP devices to be monitored. The devices file must be defined before you can start alarm monitoring. A sample devices file, Devices.txt, is provided in the OTM directory.

The configuration file defines the event information (SNMP traps) that may be received. There should be definitions for all SNMP traps that may be sent by devices specified in the devices file. Event values are mapped to variable names which can be used in the scripts file. The configuration file must be defined before you can start alarm monitoring. A sample configuration file, Config.txt, is provided in the OTM directory.

The scripts file defines how alarms are processed and which notifications are used.

Figure 12 shows a functional overview of the application.

Figure 12
Overview of Alarm Notification



A scripting language is included within the application to allow users to define alarm processing and notifications. An external text editor is required for creating scripts.

Use the scripting language to:

- define how to process events
- define new responses and notifications to predefined events

Note: Events from undefined devices are ignored.

Setting up alarm notification

Before alarm notification can function correctly, control files must be set up first. Control files include the devices file, the configuration file, and the scripts file.

The following lists an overview of the procedures to follow to set up alarm notification.

1 Make sure you have the control files correctly installed and Run Options defined.

2 Determine the IP address of your OTM PC on which you will view the events. This PC must have Alarm Notification correctly installed. The PC must be networked with the system to be monitored.

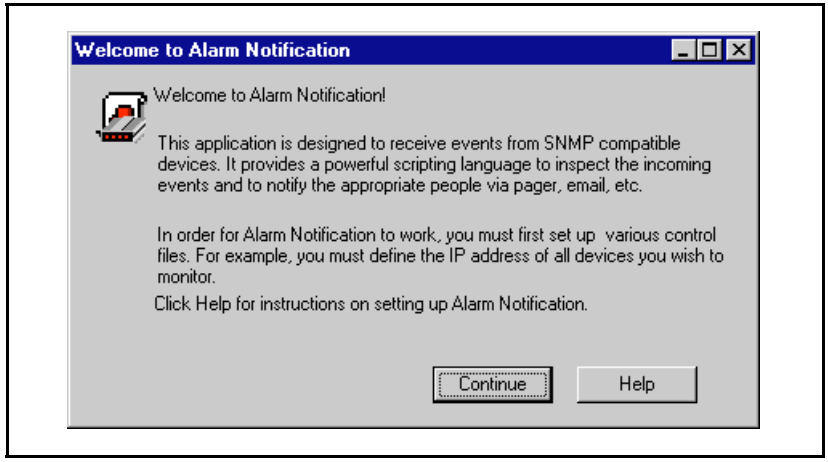
3 Use Overlay 117 to enable alarms to be sent to your OTM PC.

Install Alarm Notification control files

Make sure you have the control files correctly installed. Control files define which systems are monitored and which events are processed. For detailed instructions for defining Run Options, consult the online Help. Once the control files are defined, click on the box marked “Auto-start scripts on program launch” under the General tab in Run Options to automatically load these scripts when you next launch the application.

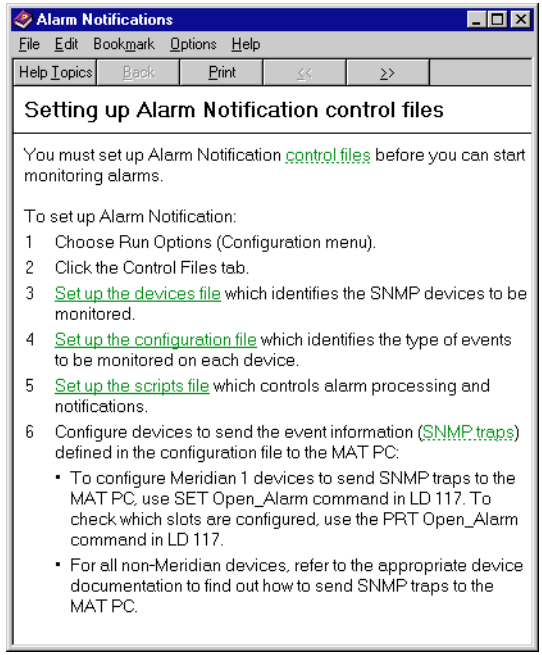
The first time the application is launched, the welcome dialog box in Figure 13 appears. Subsequent sessions do not display this window.

Figure 13
Welcome to Alarm Notification window



Click **Help**, shown in Figure 14, to view the detailed instructions for setting up the control files. Click **Continue** to go directly to the Alarm Notification window, shown in Figure 16 on page 51.

Figure 14
Help for setting up control files



Devices file

The *devices file* contains the list of monitored systems. SNMP traps that a device sends must be defined in the config control file. Users can add reference information to monitored systems specifying:

- the IP address of the system or its name from the PC hosts file
- an alias for any system name or IP address

Note: Within the Alarm Notification application, systems can be referenced by the specified alias.

Before you can start alarm monitoring, you must set up a devices file by renaming a copy of the sample Devices.txt file, then add IP addresses for the devices you want to monitor. See “Control files included with alarm notification” on page 77.

To set up the devices file:

1 In the Windows Explorer, rename a copy of the sample Devices.txt file, located in the OTM directory:

```
X:\Nortel\Common Data\Alarm Notification\Control Files
```

For example, the new filename might be *my_devices*.

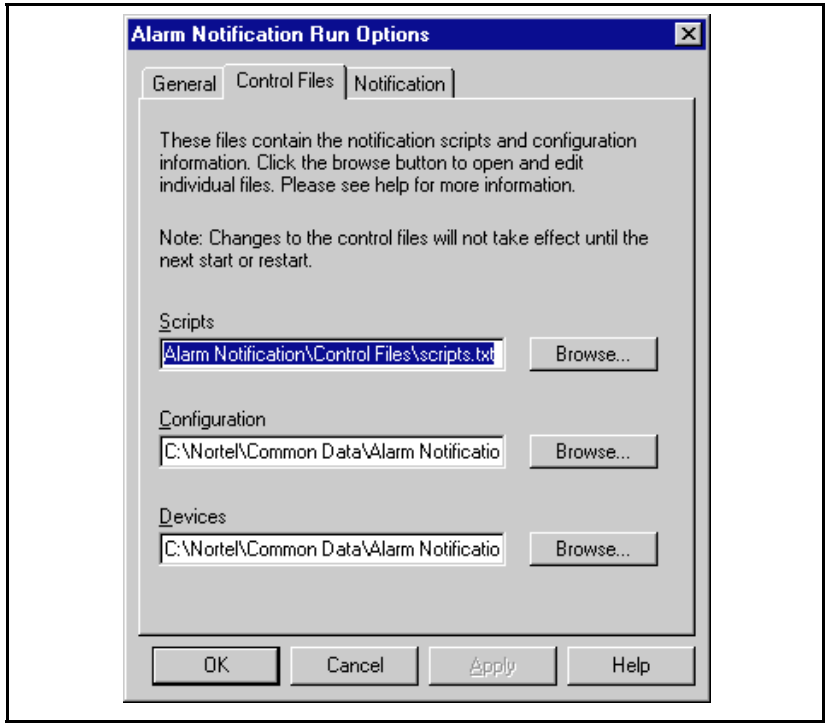
CAUTION

Do not work directly in the sample Devices.txt file. This file is overwritten when OTM is reinstalled or upgraded and any changes will be lost.

2 In the Alarm Notification application, choose **Run Options** from the Configuration menu.

3 Click the **Control Files** tab. See Figure 15.

Figure 15
Alarm Notification Run Options window, Control Files tab



4 Click the Browse button next to the Devices field. The Open dialog box appears. Use this dialog box to find and select the new devices file. Click **Open** to have the Notepad application open your copy of the devices file.

5 Replace the IP address following “Meridian1” with the IP address of your Meridian 1 system. You may also provide an alias.

6 For each additional Meridian 1 system or non-Meridian device to be monitored, enter a device type name, an IP address, and (optionally) an alias.

- Device type represents the type of device, for example, “XYZrouter”. You use this name in the configuration file to identify SNMP traps.
- IP address or PC host file name. If the PC host file is used, the address is obtained from the PC host file.
- Aliases are alternate names you can define, which identifies each device within the Alarm Notification window.

7 Save as text and close the Notepad window.

Note: Keep a backup copy of your devices file on your local drive.

Example of device file entries listing monitored Meridian 1 systems

```
Meridian1 147.114.45.6 nmkpy716
Meridian1 147.114.45.4
Meridian1 nmkpy711 myM1
```

Configuration file

A sample configuration file for Meridian systems is provided. Complete the following steps only if you want to monitor additional devices, such as routers or printers. Otherwise, you may skip this procedure. See “Control files included with alarm notification” on page 77.

To add configuration information:

1 In the Windows Explorer, rename a copy of the sample Config.txt file, located in the OTM directory:

```
X:\Nortel\Common Data\Alarm Notification\Control Files
```

For example, the new filename might be *my_config.*

CAUTION

Do not work directly in the sample Config.txt file. This file is overwritten when OTM is reinstalled or upgraded and any changes will be lost.

2 In the Alarm Notification application, choose **Run Options** from the Configuration menu.

3 Click the **Control Files** tab. See Figure 15.

4 Click the Browse button next to the Configuration field. The Open dialog box appears. Use this dialog box to find and select the new configuration file. Click **Open** to have the Notepad application open your copy of the configuration file

5 To add a new SNMP trap, type the word *device* followed by the device name (as defined in the devices file), followed by the major and minor trap types associated with the device (refer to the device manual), or the appropriate SNMP MIB.

6 Below the device name, enter the following information for each event to be monitored on the device:

- Object identifier associated with the event (refer to the device manual to find this information).
- Variable type (only 'integer' and 'string' are supported).
- Variable name (you will use the variable name to refer to this event in notification scripts).
- Event name (in quotations). This name identifies the event in the Alarm Notification window.

See “Example of configuration file entries for Meridian 1 systems” on page 48.

Note: You may use the standard Meridian 1 event definitions (variable type, variable name, and event name) to define similar variables for non-Meridian devices. The standard Meridian event names map the event values to corresponding fields within the Alarm Notification window and Event Properties sheet. If non-standard definitions are used, event information appears in the Additional Information field.

7 Repeat steps 5 and 6 for each non-Meridian 1 device to be monitored.

8 Save as text and close the Notepad window.

The following example shows the standard configuration file to process Meridian 1 events. Modify this file to add other systems to be managed. Users should be familiar with scripting logic and programming principles to effectively use and extend this application’s capabilities.

Example of configuration file entries for Meridian 1 systems

```
device Meridian1 6.10 {
1.3.6.1.4.1.562.3.3.7.1.0 integer $CurrentAlarmSeqNum
1.3.6.1.4.1.562.3.3.7.2.0 string $CurrentAlarmTime
1.3.6.1.4.1.562.3.3.7.3.0 integer $CurrentAlarmSeverity "Severity"
1.3.6.1.4.1.562.3.3.7.4.0 string $CurrentAlarmErrorCode "Error Code"
1.3.6.1.4.1.562.3.3.7.5.0 string $CurrentAlarmComponentId
1.3.6.1.4.1.562.3.3.7.6.0 string $CurrentAlarmComponentAddress
1.3.6.1.4.1.562.3.3.7.7.0 string $CurrentAlarmDescriptiveText "Text"
1.3.6.1.4.1.562.3.3.7.8.0 string $CurrentAlarmOperatorData "OperatorData"
1.3.6.1.4.1.562.3.3.7.9.0 string $CurrentAlarmExpertData "Expert Data"
1.3.6.1.4.1.562.3.3.7.10.0 string $CurrentAlarmCounts
}
```

Contained in the configuration file is a set of SNMP trap definitions, each followed by a list of the monitored devices of that type. Each trap definition begins with the word *device*, followed by the device name, and followed by a list of variables for the defined trap. For the example above, the designated name is Meridian 1, and the trap number is 10.

The next lines contain SNMP object identifiers, followed by a variable type, and followed by a variable name and an optional printable name in quotes. The variable name may be referenced in the scripting language and the printable name is displayed in the Network Event browser pane in the Alarm Notification window.

> ***Note:*** Only integer and string values are supported in the device definition entries.

Scripts file

The scripts file defines alarm processing and notification. A sample scripts file is provided which you can modify. See “Control files included with alarm notification” on page 77.

To set up the scripts file:

1 In the Windows Explorer, rename a copy of the sample Scripts.txt file, located in the OTM directory:

`X:\Nortel\Common Data\Alarm Notification\Control Files`

For example, the new filename might be *my_scripts*.

CAUTION

Do not work directly in the sample Scripts.txt file. This file is overwritten when OTM is reinstalled or upgraded and any changes will be lost.

2 In the Alarm Notification application, choose **Run Options** from the Configuration menu.

3 Click the **Control Files** tab. See Figure 15.

4 Click the Browse button next to the Scripts field. The Open dialog box appears. Use this dialog box to find and select the new scripts file. Click **Open** to have the Notepad application open your copy of the scripts file.

Using the sample script as a guide, create your own notification script file. For an example of scripts files, see “Sample Alarm Notification Scripts” on page 72 and “Control files included with alarm notification” on page 77.

5 When finished, save as text and close the Notepad application.

A script includes variables, rules, notifications, functions and logical expressions that evaluate and may apply to event data. See “Scripting” on page 53. Values defined within a script are exclusive and visible only to that script. The script container is delimited by “curly” brackets **{}**.Global values can be defined that are visible to all scripts.

When the Alarm Notification application starts, each script is executed in the order defined in the script file.

Sample Overlay 117 session

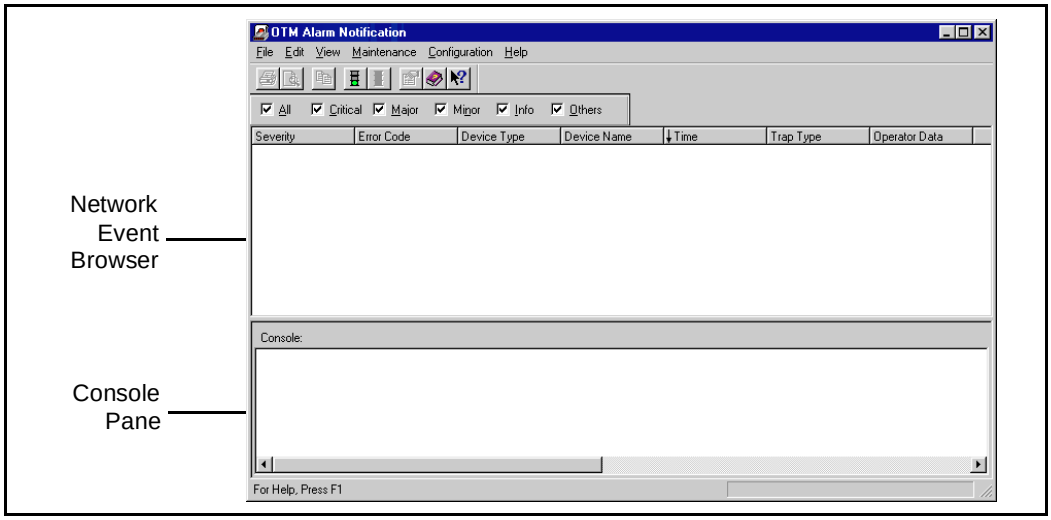
The following is a representative sample of a system terminal session using Overlay 117 to enable alarms. In this example, the OTM PC that will receive alarms has the IP address `47.82.40.6`. Slots 0 and 1 are already in use by other PCs. Use the next available slot 2 to enter the new OTM PC IP address. Note the `=>` prompt used by the overlay. All IP addresses are for example purposes only. Additional information about Overlay 117 is available in the online Help

```
login admin1
PASS?
WARNING: THE PROGRAMS AND DATA STORED ON THIS SYSTEM ARE
LICENSED TO OR ARE THE PROPERTY OF NT/BNR AND ARE LAWFULLY
AVAILABLE ONLY TO AUTHORIZED USERS FOR APPROVED PURPOSES.
UNAUTHORIZED ACCESS TO ANY PROGRAM OR DATA ON SYSTEM IS
NOT PERMITTED. THIS SYSTEM MAY BE MONITORED AT ANY TIME
FOR OPERATIONAL REASONS. THEREFORE, IF YOU ARE NOT AN
AUTHORIZED USER, DO NOT ATTEMPT TO LOGIN.
BSD000
.ld 117
OAM000
=> prt open_alarm
Open Alarm destination #0 is 47.82.40.237
Open Alarm destination #1 is 47.82.40.119
=> set open_alarm 2 47.82.40.6
=> prt op
Open Alarm destination #0 is 47.82.40.237
Open Alarm destination #1 is 47.82.40.119
Open Alarm destination #2 is 47.82.40.6
```

Using the application

Access the Alarm Notification window from the **Utilities** menu in the Navigator window. See Figure 16.

Figure 16
Alarm Notification window



The top pane of the Alarm Notification window, the Network Events browser, displays all events received since starting the application. The bottom pane, called the console, displays notifications defined in the script sent to *con*.

Consult the **Help** menu for specific descriptions of the menus, toolbar, column headings, window panes, and other functions available in the Alarm Notification window.

Use the Alarm Notification window to:

- start, stop, and restart alarm processing
- specify the control files used by the application
- view events as they are received from defined systems and devices

- view script and notification output in the console as they are received
- view received events

Events processing

Events received are displayed in the Network Events browser. As each event is received, it is placed in a queue for processing by the application. Each event is checked to see if it originates from a defined system or supported equipment. Events received from undefined systems devices are ignored and discarded from the queue.

The application executes every applicable script for each specific event type. If a rule is matched to an event type, the programmed output can be displayed in the Alarm Notification window console pane or sent as one of the other available notification types. Output to the console occurs immediately but notifications are written to disk in an internal notification spool directory used by the application to facilitate delivery and administrative recordkeeping.

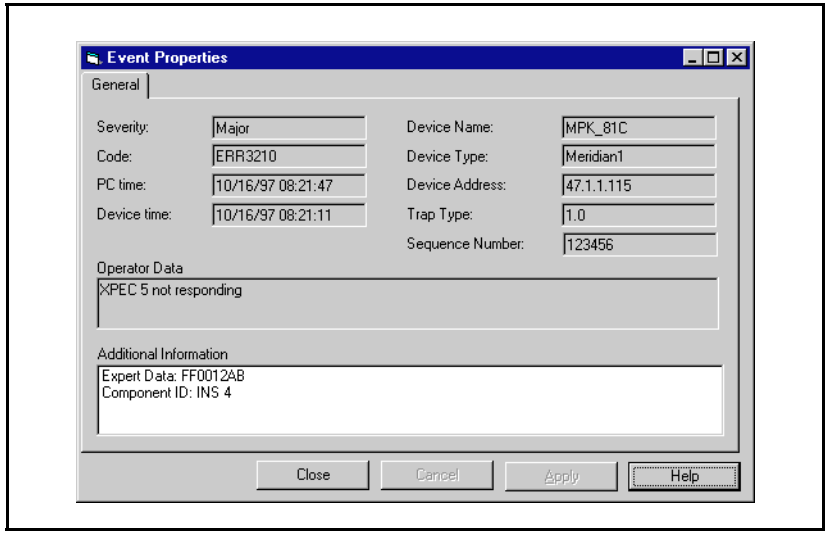
The notification process periodically polls the notification spool directory. Notifications found here are sent to the specific device or function for this notification type. Results of the notification can be displayed in the console pane. If a failure occurs due to power failure or software or hardware error, the uncompleted notifications are resumed on restart.

Viewing events properties

The Alarm Notification application receives events from many different systems and devices. Each event source may have different characteristics requiring the user to enter different information to fully define an event source. Use the property sheet in the Event Properties window to view an event’s values as defined in the specified configuration file.

To view the Event Properties window, select an event in the Network Browser pane and click on the **Properties** icon.

Figure 17
Event Properties window



Note: The Event Properties window is optimized for Meridian 1 events.

The Alarm Notification application processes events you have defined in the configuration file from specific systems or devices you have defined in the devices file. Events from undefined systems or devices are ignored.

Scripting

Scripting involves using the syntax of the programming language in the Alarm Notification application to create text files specifying certain actions to be executed for defined events. A script includes one or more logical expressions that evaluate event data and provide notification instructions. The script file may contain many scripts. When the Alarm Notification application is started, all scripts are executed against each new event as it is received.

Scripts are executed in the order defined in the script file. To cause a script to be skipped when it is not applicable, use the *when* operator. Users should be familiar with scripting logic and programming principles to effectively use and extend this application's capabilities.

Scripting syntax includes the following:

- Data types
- Operators
- Notifications
- Rules
- Comments
- Functions

These are described below. Consult the **Help** menu for specific examples of scripting syntax.

Data types

The scripting language supports three data types:

- counter

  Counters contain signed integer values. Counters may have values assigned to them at their time of definition. Multiple variables of the same data type may be declared in the same statement.

- timer

  Timers are counters that are automatically incremented when the time changes. Default timers increment once every minute. Specific update intervals other than the default increment may be defined.

- string

  Strings contain arbitrary alphanumeric data. A default string contains up to 80 characters. If more data is placed in a string than the string definition allows, the application truncates the entry.

Operators

Scripts usually contain a logical expression for testing event data. Logical expressions support the following operators, which may be used in any combination and with the aid of parentheses to clarify the order of operations.

The Alarm Notification application supports the following operators:

Table 2
Operators

Operator	Description
+, -, *, /	addition, subtraction, multiplication, division
<, <=	less than, less than or equal
>, >=	greater than, greater than or equal
=, !=	equal, not equal
<>	contains (look for substrings)
and, or	logical AND, logical OR
:=	assign a value to a variable. The data types must agree or a compiler error will result when the script is executed. If a value is assigned to a string value, the string must be declared large enough to contain the new value.

For an example of how some of these operators are used, see “Sample Alarm Notification Scripts” on page 72 and “Control files included with alarm notification” on page 77.

Notifications

Notifications define the message text and the means by which it is conveyed. The Alarm Notification application supports the notification types shown in Table 3:

Table 3
Notification types

Name	Definition
console	sends output to the console pane in the Alarm Notification window. This type of notification is the simplest and contains no fields.
npager, apager	sends messages to numeric (npager) or alphanumeric (apager) pagers
email	sends an electronic mail message to a remote system using Simple Mail Transfer Protocol (SMTP). For email to work correctly, an SMTP-capable host must be network accessible to the OTM PC.
modem (text)	sends message text over a modem attached to the OTM PC to a remote system, such as an alarm collection management workstation. To use this feature, a modem and a phone line must be connected, supported, and available. If the destination is busy, the Alarm Notification application will retry later or send the message to an alternate destination. Use the **Alarm Notification Run Options** dialog box to define additional actions.
snmp	sends SNMP traps to a remote system
file	saves the output to disk as a text file

Notification types

All notification types except *console* accept the fields *days* and *times* in their definitions. The *days* field may contain a quoted list of valid days (for example: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday) or a range of valid days of (for example, Sunday-Saturday). Different destinations may be specified depending on the current day, date, time, or alarm notification type.

Alarm Notification can deliver with the *send* syntax six types of notifications:

Console

Displays a notification to the console panel in the Alarm Notification window. No mandatory parameters are needed.

This type of notification sends output to the Console in the Alarm Notifications window. The console notification is the simplest and contains no fields. A default console notification, *con*, is provided.

Example: `// (no definition necessary)`

```
.
.
.
// send a console notification
send(con,"M1 alarm: ",
 $CurrentTrapSource," - " ,          // Name of this M1
 $CurrentAlarmErrorCode," - " ,       // M1 error code (i.e., BUG1234)
 $CurrentAlarmTime," - " ,            // Timestamp from M1
 $CurrentAlarmDescriptiveText," - ", // Text with error message
 $CurrentAlarmOperatorData);          // More text with error message
```

Note: This script displays the text “M1 alarm:” then the values for the listed traps which includes the name of the system, the error code, the time when the alarm occurred, and text associated with the error code. Note the use of *con* with the *send* syntax in the script.

Pager

Alarm Notification supports both alphanumeric and numeric pagers. You define the list of paging destinations and supported functionality for each pager. Be sure you have a modem and a valid phone line connection. Messages must match the pager type: up to 30 characters for alphanumeric pagers and only digits for numeric pagers.

Mandatory parameters are:

- `phone:=”408-555-1212”;`

  (the phone number you dial to connect to your pager service)

- `pin:="123456";`

  (the alpha pager PIN number, for the type *apager* only)

Example The following example shows a script defined to call an alphanumeric pager named "my_pager" only on Mondays and Thursday through Saturday, from 9AM to 5PM. The PIN and the pager service number are specified. Note that the number needed to access an external phone line is included.

```
notification apager my_pager
{
   days:="monday, thursday-saturday";
   times:="9am-5pm";
   pin:="123456";
   phone:="9,408-555-1212";
}
```

Note: The indentations facilitate reading the script and do not affect how the script is interpreted by the application.

E-mail

Write a message that the application sends to a specified list of recipients. The application uses Simple Mail Transfer Protocol (SMTP) to send the message. Be sure you have an SMTP-capable host connected and accessible to the OTM PC for this notification to work correctly. This host must be configured in OTM before this feature is activated. Each *send* statement is treated as a separate e-mail message.

Email messages coming from Alarm Notification are sent with "OTM" as the sender. The receiving email program may try to match OTM with a corresponding local user account and displays the closest match in the email's header. Although the header information may not be accurate due to mismatches between the term "OTM" and the local user account information, the email message is still displayed as defined by the notification.

Mandatory parameters are:

- `address:="support@tech.com";`

  (the recipient's valid e-mail address)

- `server:=”192.9.200.1”;`

  (IP address or hostname of SMTP mail server)

Example

```
// define an email notification
   notification email my_email {
      address:="joe@acme.com";
      server:="192.9.200.1";
  }
.
.
.
// send an email message
send (my_email,$CurrentTrapSource,"-MPK alarm:",
$CurrentAlarmErrorCode);
```

Note: This script defines an e-mail notification named *my_email* which has an associated recipient address and the mail server IP address. This script sends e-mail to the address stating the source of the alarm and the alarm error code. Note the use of the named email notification *my_email* with the *send* syntax in the script.

Text (over modem)

Write a message that the application sends to a remote modem. The application connects to the remote modem (usually a remote support site) defined by the user and transmits the message. Be sure you have a modem and a valid phone line connection.

If the remote modem is busy, the application stores and notes the message for a later delivery or sends it to another specified alternate destination.

Mandatory parameters are:

- `phone:=”408-555-4321”;`

  (the phone number you dial to connect to the remote modem)

Example `//define text over modem notification`

```
   notification modem tech_center   {
   phone:="9,555-4321";
  }
.
.
.
//send text over modem notification
send (tech_center,$CurrentTrapSource,"-MPK alarm:",
$CurrentAlarmErrorCode);
```

Note: This script defines a modem notification named *tech_center* which has an associated number to dial to connect to the remote modem. This script sends text to the dialed remote modem stating the source of the alarm and the alarm error code. Note the use of the named modem notification *tech_center* with the *send* syntax in the script

SNMP

The OTM PC can generate Simple Network Management Protocol (SNMP) traps as defined by the user. Define SNMP Object Identifiers (OIDs) as parameters in the *send* syntax. Specify a list of TCP/IP addresses or registered hostnames on the Ethernet network to receive the trap. However, receipt is not guaranteed once messages are transmitted. You should be familiar and knowledgeable with SNMP to fully use this notification type.

Mandatory parameters are:

- `address:=”`192.9.200.1`”;`

  (IP address or hostname of the destination for the trap)

- `trap:=”6.10”;`

  (trap type in Major type.Trap number format)

Example Below is an example, where *control_center* is already defined as an SNMP notification:

```
// define an SNMP notification
   notification snmp control_center {
      address:="192.9.200.1";
      trap:="6.10";
```

```
   }
.
.
.
// send an SNMP notification to the control center with the same trap
//format as the M1

   send(control_center,
"1.3.6.1.4.1.562.3.3.7.1.0","Integer",$CurrentAlarmSeqNum,
"1.3.6.1.4.1.562.3.3.7.2.0","OctetString",$CurrentAlarmTime,
"1.3.6.1.4.1.562.3.3.7.3.0","Integer",$CurrentAlarmSeverity,
"1.3.6.1.4.1.562.3.3.7.4.0","OctetString",$CurrentAlarmErrorCode,
"1.3.6.1.4.1.562.3.3.7.5.0","OctetString",$CurrentAlarmComponentId,
"1.3.6.1.4.1.562.3.3.7.6.0","OctetString",$CurrentAlarmComponentAddress,
"1.3.6.1.4.1.562.3.3.7.7.0","OctetString",$CurrentAlarmDescriptiveText,
"1.3.6.1.4.1.562.3.3.7.8.0","OctetString",$CurrentAlarmOperatorData,
"1.3.6.1.4.1.562.3.3.7.9.0","OctetString",$CurrentAlarmExpertData);
```

Note: The script identifies the value of each variable in the trap generated, whether an integer or an octet string.

Log file

Write a message that the application saves to a text file. Specify the storage location of this text file in the script. If no pathname is specified, the file is saved in the same directory as the Alarm Notification application.

Mandatory parameters are:

- `filename:=”c:\Normat\sample_log”;`

  (full pathname and filename)

Example

```
// define a file notification
notification file sample_file {
filename  :=  "c:\eventlog.txt";
}
.
.
.
// send a file notification
send(sample_file, “M1 alarm: “,
$CurrentTrapSource," - " ,          // Name of this M1
$CurrentAlarmErrorCode," - " ,       // M1 error code (i.e., BUG1234)
$CurrentAlarmTime," - " ,            // Timestamp from M1
$CurrentAlarmDescriptiveText," - ", // Text with error message
$CurrentAlarmOperatorData);          // More text with error message
```

Note: This script defines a log file notification named *sample_file* having an associated pathname defining a storage location on the c: drive. The store file is named *eventlog.txt*. Note the use of the named file notification *sample_file* with the *send* syntax in the script

Rules

Rules allow users to define actions that may be applied to a given event. Rules may only be defined in scripts. By default, rules are examined in a top-down manner. An *infer* statement may be used to explicitly specify the order in which rules are examined. A rule consists of an *if* statement containing a logical expression, followed by an instruction.

A rule may also include an *else* statement, which is only executed if the logical expression in the *if* statement is false. Within a rule, a *send* statement or a function may be called. New variables may not be defined within the scope of a rule.

Comments

Comments provide a convenient way of adding informational notes within a script. To include comments within a script use the C conventions (begin with /* and end with */) or C++ conventions (begin the comment with //).

For example:

```
/* This is a comment. */

// This is another comment.
```

Note: Many of the scripts presented in this user guide have portions noted as comments. Remove the comment tags for the application to interpret these as actual scripting code.

Functions

Functions contain a combination of logical expressions and optional variable declarations. They accept parameters and return a single result. Functions may be invoked within logical expressions, or rules, or invoked within themselves. Within a function, assignments may occur along with *if* and *loop* statements.

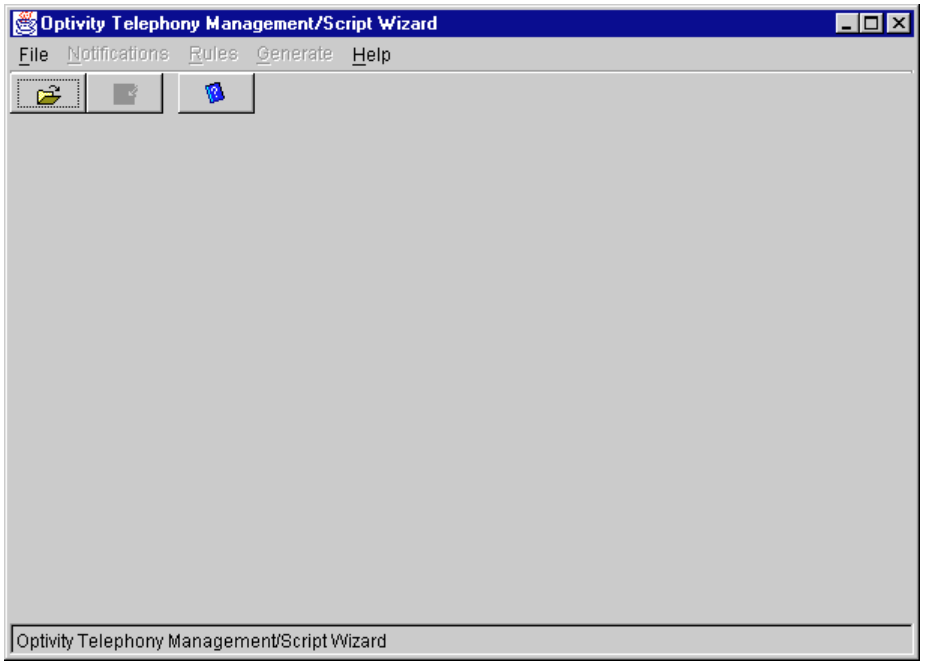
Script Wizard

The Script Wizard is a graphical easy-to -use tool that enables the user to define, consult, and edit the notifications sent when OTM receives an alarm message.

The Script Wizard generates scripts that can be compiled by the Alarm Notification script compiler. The Script Wizard is not able to open scripts that are not generated by it. If you edit a generated script file, the script will no longer be understood by Script Wizard.

1 To run the Script Wizard, go to the Windows Start Menu and select **Programs**, **Alarm Script Wizard** (Figure 18).

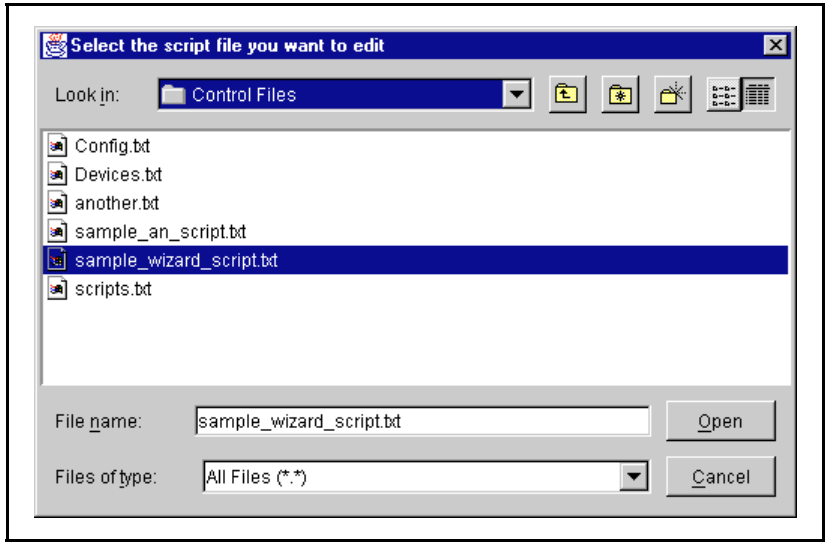
Figure 18
Alarm Script Wizard



2 Select **File**, **Open** or click on the Open button to open a scripts file.

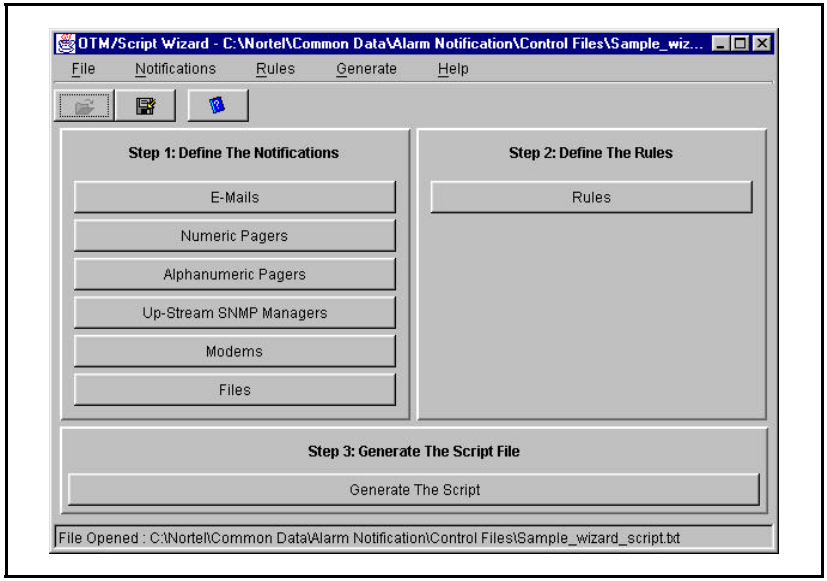
Select the appropriate filename and click on **Open** to load the file (Figure 19)

Figure 19
Select scripts file screen



Once an existing script has been loaded or a new script has been created, the main Script Wizard screen appears. See Figure 20.

Figure 20
Main Script Wizard screen



Use the Script Wizard to create basic script files. To define more elaborate notification rules, see “Scripting” on page 53.

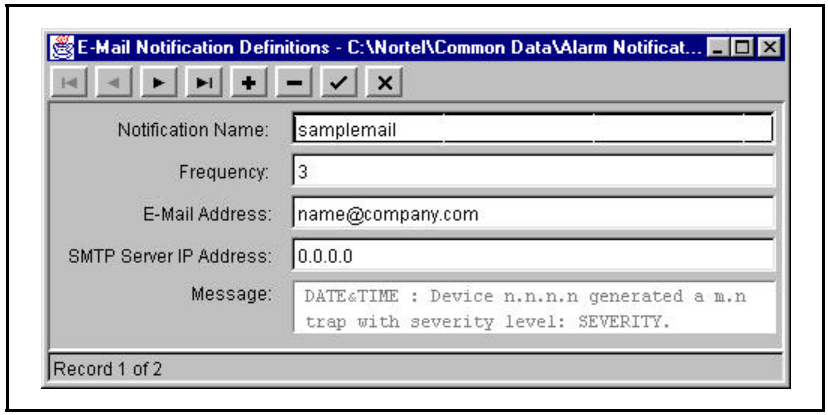
Step 1: Define the Notifications

A list of available notification types is shown in the Main Script Wizard screen. There are six available notification types.

- E-Mails
- Numeric Pagers
- Alphanumeric Pagers
- Up-Stream SNMP Managers
- Modems
- Files

Clicking on one of the notification types opens the corresponding definitions screen. The definition screen is used to edit notification parameters. Figure 21 shows the E-Mail Notification Definition screen.

Figure 21
E-Mail Notification Definition screen

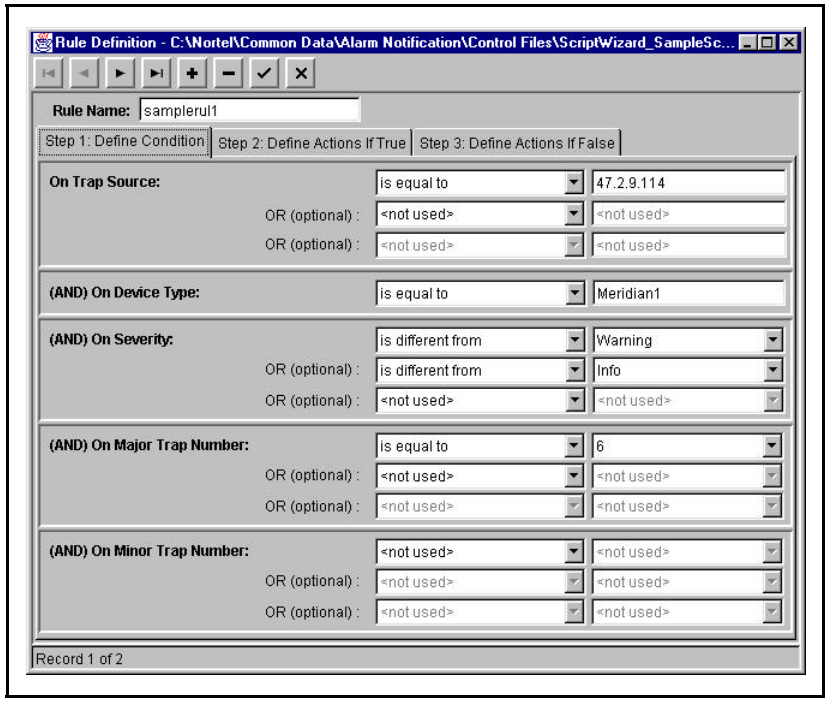


A Frequency is associated with each notification. The number entered in the Frequency field indicates the number of times the notification is called by the program before the action is actually executed. In the example shown in Figure 21, the E-Mail will be sent after the third occurrence of the notification.

Step 2: Define the Rules

Each rule is defined by a unique Rule Name. You can add, remove, and edit a rule using buttons and pull down menus. Rule definition is divided into three sections. The first section, Define Condition, is shown in Figure 22. This section defines a test to be applied to each alarm processed by the application. A condition is composed of five segments or sub-conditions.

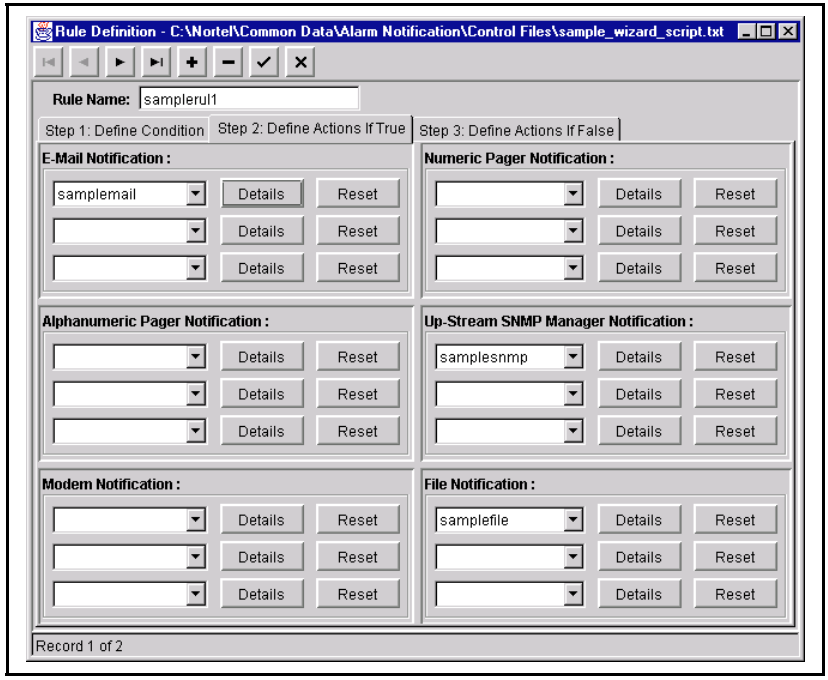
Figure 22
Define Condition screen



The second section, Define Actions if True, describes the actions to be taken if the condition defined in the first section is true. This section is shown in Figure 23. The action should be a reference to an already defined notification.

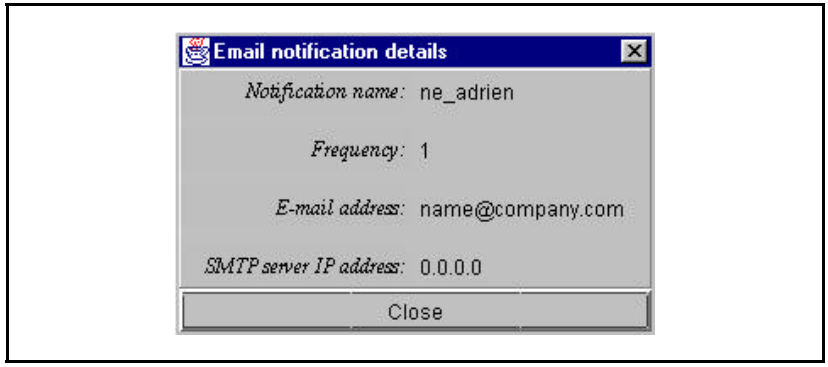
See Figure 21. A minimum of one action is required. You may enter up to

Figure 23
Define Action If True screen



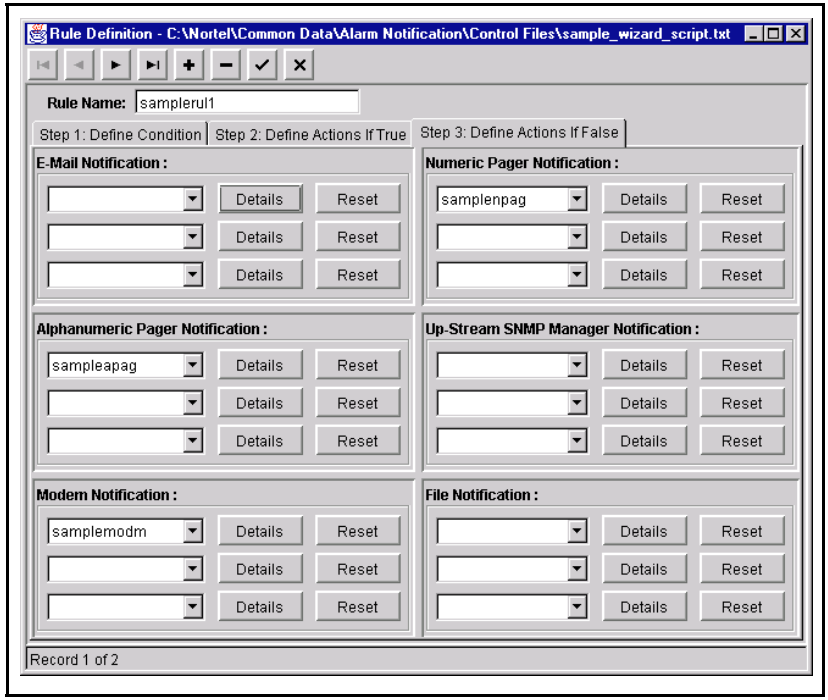
three actions for each type of notification for a total of eighteen actions. Click on the **Details** button to display the notification definition as shown in the example in Figure 24

Figure 24
E-mail notification details



The third section, Define Actions if False, describes the actions to be taken if the condition defined in the first section is false. This section is shown in Figure 25. You are not required to enter any information in this section, but you may enter up to three actions for each type of notification.

Figure 25
Define Actions If False



Step 3: Generate the Script File

The final step in Script Wizard is to generate the script file. Press the **Generate The Script** button to complete the process.

Sample Alarm Notification Scripts

This section shows portions of a sample script to illustrate scripting syntax that perform common alarm notification tasks.

Log file

This script uses the *file* notification. This script saves all events to the filename “sample_log.txt” in the defined location.

> ***Note:*** Windows “long” file names are allowed in the scripts but are truncated when the system saves the file. Keep your file names to the standard eight character length.

```
notification file sample_file {
   filename:="c:\sample_log.txt";
}
```

Numeric pager

This script uses the *npager* notification. Customize this script by typing in your numeric pager number

```
notification npager sample_numeric_pager {
   phone:="9,555-1212";
}
```

Alphanumeric pager

This script uses the *apager* notification. Customize this script by typing in your alphanumeric pager number and Personal Identification Number (PIN).

```
notification apager sample_alpha_pager {
   phone:="9,555-1212";
   pin:="101565";
}
```

Severity code descriptions

This script examines error codes generated by the Meridian 1 and assigns descriptive text to them. This portion of the script uses the *counter* data type and the *send* alarm notification to send alarm notifications to a file and a pager. Note the use of *rule* and *send* syntax. Note the *$Current...* references to configuration file entries. See “Example of configuration file entries for Meridian 1 systems” on page 48.

```
/* Provide variables to map M1 severity values into words */
counter info:=0,minor:=1,major:=2,critical:=3,debug:=4;
script SampleScript {
   counter bug3456:=0;

   /* This rule looks for critical M1 events */
   rule check_critical {
      if ($CurrentTrapDevice="Meridian1" and
$CurrentAlarmSeverity=critical)
```

Note: The *if* statement ensures that only critical alarms from the Meridian 1 are processed.

```
         {
         /* print event to console */
         send(con,"M1 alarm: ",
    $CurrentTrapSource," - " ,          // Name of this M1
   $CurrentAlarmErrorCode," - " ,       // M1 error code (i.e., BUG1234)
   $CurrentAlarmTime," - " ,            // Timestamp from M1
   $CurrentAlarmDescriptiveText," - ", // Text with error message
   $CurrentAlarmOperatorData);          // More text with error message
```

Note: The script displays on the console pane information about the M1 alarm, including the system where the alarm originated, the error code of the alarm, the time of the alarm, any descriptive text associated with the alarm, and other text associated with the error alarm.

```
         /* append event to log file */
         send(sample_file,"M1 alarm: ",
    $CurrentTrapSource," - " ,          // Name of this M1
   $CurrentAlarmErrorCode," - " ,       // M1 error code (i.e., BUG1234)
   $CurrentAlarmTime," - " ,            // Timestamp from M1
   $CurrentAlarmDescriptiveText," - ", // Text with error message
   $CurrentAlarmOperatorData);          // More text with error message
```

Note: The script saves to a named file on disk the same information about the M1 alarm that was displayed on the console.

```
        /* optionally send message to alpha pager */
send(sample_alpha_pager,$CurrentTrapSource,":",$CurrentAlarmCode,"!");
*/
        }
   }
```

Note: The send command contacts the pager named as *sample_alpha_pager* with the error information "M1 : BUG1234" where M1 is the name of the system that has the error and BUG1234 is the error type.

Specific system events

This script examines error codes generated by the Meridian 1 for a specific event code and counts the number of occurrences for this event. For this example, BUG3456 is the specific event code. This portion of the script displays to the console the time when the error occurred. Customize this script by typing in your error code. This script may be of use if you are trying to troubleshoot the system for a specific problem.

This rule is named *check_specific_event* and examines events from the device named Meridian 1 for error code BUG3456. If this event is detected, the console displays "Found BUG3456 at <*alarm time*>" where <*alarm time*> is the timestamp provided by the system.

This script uses the *rule* syntax.

```
rule check_specific_event {
      if ($CurrentTrapDevice="Meridian1" and
$CurrentAlarmErrorCode="BUG3456")
         {
         send(con,bug3456,")
Found ",$CurrentAlarmErrorCode," at ",$CurrentAlarmTime);
         bug3456:=bug3456+1;
         }
   }
```

Combining scripts

Several scripts are often found in a single script file. The sample scripts in this section are combined into a single text file named *Script.txt* included with the application. See “The scripts file” on page 84. Note the use of comments to document the various portions of the script.

Scripting notes

The scripting language available with Alarm Notification allows tremendous flexibility and functionality in defining how the application processes events from connected systems. You can use any text editor such as Notepad to write your script. Use the Control Files tab in **Alarm Notification Run Options** to specify the script and other control files you will use.

Customized scripts are interpreted by the Alarm Notification application. Errors in the script are noted and related error messages are displayed in the console panel in the Alarm Notification window. Scripting error messages include the line number where the error occurred, as counted from the top of the text file, as well as a short error description.

Appendix A: Control files included with alarm notification

This section displays the control files that are loaded into the OTM PC when the Alarm Notification application is installed. These files are loaded into the default location `C:\Nortel\Common Data\Alarm Notification\Control Files` unless otherwise specified.

CAUTION

Always use a copy of these files when customizing them for your specific environment. Do not use the original files supplied with your OTM product. These files are overwritten when OTM is reinstalled or upgraded; if you have customized the original files, any changes will be lost.

The devices file

This section shows the contents of the *Devices.txt* file included with the application.

```
# This file contains a list of specific devices to be monitored by
# Alarm Notification.  As this file may be replaced during a software ,
# upgrade it is suggested that any changes be made in a copy and the copy .
# used.
#The following are example definitions:
#
#Meridian1 192.9.200.1 my_m1
#Meridian1 192.9.200.2
#Meridian1 sample_m1
```

```
#OTM          47.82.40.57
#MMCS         47.32.164.69
#ITG          47.82.45.161
#ITG_ISDN_TRK 47.82.46.64
#ITG_IP_LINE  47.114.40.31
#ITG_IP_PHONE 47.114.40.31
#ISS7         47.49.4.78
#BRAVO        47.49.4.80
#CALL_PILOT   47.235.12.85
#BS450        47.32.164.80
#MMCS_AP      47.49.4.20
#
# User-provided devices should be added below this line.

Meridian1 47.114.45.3
Meridian1 47.114.45.5
Meridian1 47.114.45.7
MMCS      47.114.45.2
```

The configuration file

This section shows the contents of the *Config.txt* file included with the application.

```
# The following definitions contain device definitions for Nortel
# supported devices.  As this file may be replaced during a software
# upgrade, it is suggested that any changes be made in a copy and the copy
# used.

device Meridian1 6.10 {
   1.3.6.1.4.1.562.3.3.7.1.0  integer $CurrentAlarmSeqNum
   1.3.6.1.4.1.562.3.3.7.2.0  string  $CurrentAlarmTime
   1.3.6.1.4.1.562.3.3.7.3.0  integer $CurrentAlarmSeverity
"Severity"
  1.3.6.1.4.1.562.3.3.7.4.0  string  $CurrentAlarmErrorCode      "Error
Code"
   1.3.6.1.4.1.562.3.3.7.5.0  string  $CurrentAlarmComponentId
```

```
   1.3.6.1.4.1.562.3.3.7.6.0  string  $CurrentAlarmComponentAddress
   1.3.6.1.4.1.562.3.3.7.7.0  string  $CurrentAlarmDescriptiveText  "Text"
   1.3.6.1.4.1.562.3.3.7.8.0  string  $CurrentAlarmOperatorData
"Operator Data"
   1.3.6.1.4.1.562.3.3.7.9.0  string  $CurrentAlarmExpertData     "Expert
Data"
   1.3.6.1.4.1.562.3.3.7.10.0 string  $CurrentAlarmCounts
}

device MMCS 6.10 {
   1.3.6.1.4.1.562.3.3.7.1.0 integer $CurrentAlarmSeqNum
   1.3.6.1.4.1.562.3.3.7.2.0 string $CurrentAlarmTime
   1.3.6.1.4.1.562.3.3.7.3.0 integer $AlarmSeverity "Severity"
   1.3.6.1.4.1.562.3.3.7.4.0 string $CurrentAlarmErrorCode "Error Code"
   1.3.6.1.4.1.562.3.3.7.5.0 string $CurrentAlarmComponentId
   1.3.6.1.4.1.562.3.3.7.6.0 string $CurrentAlarmComponentAddress
   1.3.6.1.4.1.562.3.3.7.7.0 string $CurrentAlarmDescriptiveText "Text"
   1.3.6.1.4.1.562.3.3.7.8.0 string $CurrentAlarmOperatorData "Operator
Data"
   1.3.6.1.4.1.562.3.3.7.9.0 string $CurrentAlarmExpertData "Expert Data"
   1.3.6.1.4.1.562.3.3.7.10.0 string $CurrentAlarmCounts
}

device OTM 6.1 6.2 6.3 6.4 6.5 6.6 {
   1.3.6.1.4.1.562.50.1.2.1.0  integer $CurrentAlarmSeqNum         "Seq.
#"
   1.3.6.1.4.1.562.50.1.2.2.0  string  $CurrentAlarmTime
"Date/Time"
   1.3.6.1.4.1.562.50.1.2.3.0  integer $AlarmSeverity
"Severity"
   1.3.6.1.4.1.562.50.1.2.4.0  integer $AlarmNameSpace             "Name
Space"
   1.3.6.1.4.1.562.50.1.2.5.0  string  $CurrentAlarmErrorCode      "Error
Code"
   1.3.6.1.4.1.562.50.1.2.6.0  string  $AlarmSite                  "Site"
   1.3.6.1.4.1.562.50.1.2.7.0  string  $AlarmSystem               "System"
   1.3.6.1.4.1.562.50.1.2.8.0  string  $AlarmSystemComponent      "System
Component"
```

```
  1.3.6.1.4.1.562.50.1.2.9.0  integer $AlarmOriginatingAgent      "Orig.
Agent"
   1.3.6.1.4.1.562.50.1.2.12.0 string  $CurrentAlarmOperatorData
"Operator Data"
   1.3.6.1.4.1.562.50.1.2.13.0 string  $CurrentAlarmExpertData
"Expert Data"
   1.3.6.1.4.1.562.50.1.2.14.0 string  $CurrentAlarmDescriptiveText
"Text"
}

device ITG 6.1 6.2 6.3 6.4 6.5 6.6 {
  1.3.6.1.4.1.562.3.11.1.4.1.7.2.0 string $ComponentName "Component Name"
   1.3.6.1.4.1.562.3.11.1.4.1.7.3.0 string $EventTime "Event Time"
   1.3.6.1.4.1.562.3.11.1.4.1.7.4.0 integer $ActiveListStatus "Active
Status"
   1.3.6.1.4.1.562.3.11.1.4.1.7.5.0 integer $AlarmSeverity "Severity"
   1.3.6.1.4.1.562.3.11.1.4.1.7.6.0 integer $AlarmType "Alarm Type"
   1.3.6.1.4.1.562.3.11.1.4.1.7.7.0 integer $ProbableCause "Probable
Cause"
   1.3.6.1.4.1.562.3.11.1.4.1.7.8.0 string $NtpIndex "Ntp Index"
   1.3.6.1.4.1.562.3.11.1.4.1.7.9.0 string $CommentData "Common Data"
}

device ITG_ISDN_TRK 6.1 6.2 6.3 6.4 6.5 6.6 {
  1.3.6.1.4.1.562.3.11.2.4.1.7.2.0 string $ComponentName "Component Name"
   1.3.6.1.4.1.562.3.11.2.4.1.7.3.0 string $EventTime "Event Time"
   1.3.6.1.4.1.562.3.11.2.4.1.7.4.0 integer $ActiveListStatus "Active
Status"
   1.3.6.1.4.1.562.3.11.2.4.1.7.5.0 integer $AlarmSeverity "Severity"
   1.3.6.1.4.1.562.3.11.2.4.1.7.6.0 integer $AlarmType "Alarm Type"
   1.3.6.1.4.1.562.3.11.2.4.1.7.7.0 integer $ProbableCause "Probable
Cause"
   1.3.6.1.4.1.562.3.11.2.4.1.7.8.0 string $NtpIndex "Ntp Index"
   1.3.6.1.4.1.562.3.11.2.4.1.7.9.0 string $CommentData "Common Data"
}

device ITG_IP_LINE 6.1 6.2 6.3 6.4 6.5 6.6 {
  1.3.6.1.4.1.562.3.11.3.4.1.7.2.0 string $ComponentName "Component Name"
```

```
   1.3.6.1.4.1.562.3.11.3.4.1.7.3.0 string $EventTime "Event Time"
   1.3.6.1.4.1.562.3.11.3.4.1.7.4.0 integer $ActiveListStatus "Active
Status"
   1.3.6.1.4.1.562.3.11.3.4.1.7.5.0 integer $AlarmSeverity "Severity"
   1.3.6.1.4.1.562.3.11.3.4.1.7.6.0 integer $AlarmType "Alarm Type"
   1.3.6.1.4.1.562.3.11.3.4.1.7.7.0 integer $ProbableCause "Probable
Cause"
   1.3.6.1.4.1.562.3.11.3.4.1.7.8.0 string $NtpIndex "Ntp Index"
   1.3.6.1.4.1.562.3.11.3.4.1.7.9.0 string $CommentData "Common Data"
}

device ITG_IP_PHONE 6.1 6.2 6.3 6.4 6.5 6.6 {
  1.3.6.1.4.1.562.3.11.5.4.1.7.2.0 string $ComponentName "Component Name"
   1.3.6.1.4.1.562.3.11.5.4.1.7.3.0 string $EventTime "Event Time"
   1.3.6.1.4.1.562.3.11.5.4.1.7.4.0 integer $ActiveListStatus "Active
Status"
   1.3.6.1.4.1.562.3.11.5.4.1.7.5.0 integer $AlarmSeverity "Severity"
   1.3.6.1.4.1.562.3.11.5.4.1.7.6.0 integer $AlarmType "Alarm Type"
   1.3.6.1.4.1.562.3.11.5.4.1.7.7.0 integer $ProbableCause "Probable
Cause"
   1.3.6.1.4.1.562.3.11.5.4.1.7.8.0 string $NtpIndex "Ntp Index"
   1.3.6.1.4.1.562.3.11.5.4.1.7.9.0 string $CommentData "Common Data"
}
device ISS7 6.1 6.2 6.3 6.4 6.5 6.6 {
   1.3.6.1.4.1.562.27.2.1.7.2.0 string $ComponentName "Component Name"
   1.3.6.1.4.1.562.27.2.1.7.3.0 string $EventTime "Event Time"
   1.3.6.1.4.1.562.27.2.1.7.4.0 integer $ActiveListStatus "Active Status"
   1.3.6.1.4.1.562.27.2.1.7.5.0 integer $AlarmSeverity "Severity"
   1.3.6.1.4.1.562.27.2.1.7.6.0 integer $AlarmType "Alarm Type"
   1.3.6.1.4.1.562.27.2.1.7.7.0 integer $ProbableCause "Probable Cause"
   1.3.6.1.4.1.562.27.2.1.7.8.0 string $NtpIndex "Ntp Index"
   1.3.6.1.4.1.562.27.2.1.7.9.0 string $CommentData "Common Data"
}

device BRAVO 6.1 6.2 6.3 6.4 6.5 6.6 {
  1.3.6.1.4.1.562.3.11.4.4.1.7.2.0 string $ComponentName "Component Name"
   1.3.6.1.4.1.562.3.11.4.4.1.7.3.0 string $EventTime "Event Time"
```

```
   1.3.6.1.4.1.562.3.11.4.4.1.7.4.0 integer $ActiveListStatus "Active
Status"
   1.3.6.1.4.1.562.3.11.4.4.1.7.5.0 integer $AlarmSeverity "Severity"
   1.3.6.1.4.1.562.3.11.4.4.1.7.6.0 integer $AlarmType "Alarm Type"
   1.3.6.1.4.1.562.3.11.4.4.1.7.7.0 integer $ProbableCause "Probable
Cause"
   1.3.6.1.4.1.562.3.11.4.4.1.7.8.0 string $NtpIndex "Ntp Index"
   1.3.6.1.4.1.562.3.11.4.4.1.7.9.0 string $CommentData "Common Data"
}

device BS450 0.0 1.0 2.0 3.0 4.0 5.0 {
   1.3.6.1.2.1.2.2.1.1.1 integer $Port1 "Port 1"
   1.3.6.1.2.1.2.2.1.1.2 integer $Port2 "Port 2"
   1.3.6.1.2.1.2.2.1.1.3 integer $Port3 "Port 3"
   1.3.6.1.2.1.2.2.1.1.4 integer $Port4 "Port 4"
   1.3.6.1.2.1.2.2.1.1.5 integer $Port5 "Port 5"
   1.3.6.1.2.1.2.2.1.1.6 integer $Port6 "Port 6"
   1.3.6.1.2.1.2.2.1.1.7 integer $Port7 "Port 7"
   1.3.6.1.2.1.2.2.1.1.8 integer $Port8 "Port 8"
   1.3.6.1.2.1.2.2.1.1.9 integer $Port9 "Port 9"
   1.3.6.1.2.1.2.2.1.1.10 integer $Port10 "Port 10"
   1.3.6.1.2.1.2.2.1.1.11 integer $Port11 "Port 11"
   1.3.6.1.2.1.2.2.1.1.12 integer $Port12 "Port 12"
   1.3.6.1.2.1.2.2.1.1.13 integer $Port13 "Port 13"
   1.3.6.1.2.1.2.2.1.1.14 integer $Port14 "Port 14"
   1.3.6.1.2.1.2.2.1.1.15 integer $Port15 "Port 15"
   1.3.6.1.2.1.2.2.1.1.16 integer $Port16 "Port 16"
   1.3.6.1.2.1.2.2.1.1.17 integer $Port17 "Port 17"
   1.3.6.1.2.1.2.2.1.1.18 integer $Port18 "Port 18"
   1.3.6.1.2.1.2.2.1.1.19 integer $Port19 "Port 19"
   1.3.6.1.2.1.2.2.1.1.20 integer $Port20 "Port 20"
   1.3.6.1.2.1.2.2.1.1.21 integer $Port21 "Port 21"
   1.3.6.1.2.1.2.2.1.1.22 integer $Port22 "Port 22"
   1.3.6.1.2.1.2.2.1.1.23 integer $Port23 "Port 23"
   1.3.6.1.2.1.2.2.1.1.24 integer $Port24 "Port 24"
}
```

```
device CALL_PILOT 6.1 6.2 6.3 6.4 {
   1.3.6.1.4.1.562.3.8.1.5.2.1.2.0 string $nbFltAlarmTimeStamp "Event
Time"
   1.3.6.1.4.1.562.3.8.1.5.2.1.3.0 integer $nbFltAlarmEventCode "Error
Code"
   1.3.6.1.4.1.562.3.8.1.5.2.1.4.0 integer $nbFltAlarmEventType "Alarm
Type"
   1.3.6.1.4.1.562.3.8.1.5.2.1.5.0 integer $AlarmSeverity "Severity"
   1.3.6.1.4.1.562.3.8.1.5.2.1.8.0 string $nbFltAlarmOriginator
"Component Name"
   1.3.6.1.4.1.562.3.8.1.5.2.1.9.0 string $nbFltAlarmDescription
"Operator Data"
}

device MMCS_AP 6.1 6.2 6.3 6.4 6.5 6.6 {
   1.3.6.1.4.1.562.27.2.1.7.2.0 string $ComponentName "Component Name"
   1.3.6.1.4.1.562.27.2.1.7.3.0 string $EventTime "Event Time"
   1.3.6.1.4.1.562.27.2.1.7.4.0 integer $ActiveListStatus "Active Status"
   1.3.6.1.4.1.562.27.2.1.7.5.0 integer $AlarmSeverity "Severity"
   1.3.6.1.4.1.562.27.2.1.7.6.0 integer $AlarmType "Alarm Type"
   1.3.6.1.4.1.562.27.2.1.7.7.0 integer $ProbableCause "Probable Cause"
   1.3.6.1.4.1.562.27.2.1.7.8.0 string $NtpIndex "Ntp Index"
   1.3.6.1.4.1.562.27.2.1.7.9.0 string $CommentData "Common Data"
}

# Add user supplied device definitions below this comment line.
```

The scripts file

The following is a printout of the *Scripts.txt* file included with the application.

```
/* This file contains a simple example of script file usage. */

/* ************************************************************
This is a sample definition for using a log file.  All events sent
   to this notification will be appended to the filename defined below.
   Please note that Windows "long" file names are not supported.
************************************************************* */

notification file sample_file {
   filename:="c:\sample_log.txt";
}

/* ************************************************************
This is a sample definition for using a numeric pager
   To use, the phone number should be changed to your pager number
   and the notification (as well as the references to it) should be
   uncommented.
************************************************************* */
/*
notification npager sample_numeric_pager {
   phone:="9,555-1212";
}
*/

/* ************************************************************
This is a sample definition for using a numeric pager
   To use, the phone number should be changed to your pager number,
   your PIN number should be added, and the notification (as well
   as the references to it) should be uncommented.
************************************************************* */
/*
notification apager sample_alpha_pager {
   phone:="9,555-1212";
   pin:="101565";
```

```
}
*/

/* ***********************************************
Old Open Alarm Trap Forwarded to Optivity NMS
*********************************************** */
notification snmp HpOvTrap {
   address:="47.82.36.19";
   trap:="6.10";
}
/*
*************************************************************************
****
     Old Open Alarm Trap Forwarded to Optivity NMS as an OTM Open Alarm Trap
*************************************************************************
**** */
notification snmp OtmOpenAlarm1ToNMS {
   address:="47.82.36.19";
   trap:="6.1";
}
notification snmp OtmOpenAlarm2ToNMS {
   address:="47.82.36.19";
   trap:="6.2";
}
notification snmp OtmOpenAlarm3ToNMS {
   address:="47.82.36.19";
   trap:="6.3";
}
notification snmp OtmOpenAlarm4ToNMS {
   address:="47.82.36.19";
   trap:="6.4";
}
notification snmp OtmOpenAlarm5ToNMS {
   address:="47.82.36.19";
   trap:="6.5";
}
notification snmp OtmOpenAlarm6ToNMS {
```

```
   address:="47.82.36.19";
   trap:="6.6";
}
// ------------------------------------

/* Provide variables to map M1 severity values into words */
counter info:=0,minor:=1,major:=2,critical:=3,debug:=4;

script SampleScript {
   counter bug3456:=0;

   /* This rule looks for critical M1 events */
   rule check_critical {
      if ($CurrentTrapDevice="Meridian1" and
$CurrentAlarmSeverity=critical) {
         /* print event to console */
         send(con,"M1 alarm: ",
        $CurrentTrapSource," - " ,          // Name of this M1
     $CurrentAlarmErrorCode," - " ,      // M1 error code (i.e., BUG1234)
      $CurrentAlarmTime," - " ,           // Timestamp from M1
      $CurrentAlarmDescriptiveText," - ", // Text with error message
      $CurrentAlarmOperatorData);         // More text with error message

         /* append event to log file */
         send(sample_file,"M1 alarm: ",
      $CurrentTrapSource," - " ,          // Name of this M1
     $CurrentAlarmErrorCode," - " ,      // M1 error code (i.e., BUG1234)
      $CurrentAlarmTime," - " ,           // Timestamp from M1
      $CurrentAlarmDescriptiveText," - ", // Text with error message
      $CurrentAlarmOperatorData);         // More text with error message

         /* optionally send message to alpha pager */
         /*
         send(sample_alpha_pager, $CurrentTrapSource,":",
$CurrentAlarmErrorCode,"!");
         */
```

```
        /*
        send( HpOvTrap,
 "1.3.6.1.4.1.562.3.3.7.1.0",  "Integer",     $CurrentAlarmSeqNum,
 "1.3.6.1.4.1.562.3.3.7.2.0",  "OctetString", $CurrentAlarmTime,
 "1.3.6.1.4.1.562.3.3.7.3.0",  "Integer",     $CurrentAlarmSeverity,
 "1.3.6.1.4.1.562.3.3.7.4.0",  "OctetString", $CurrentAlarmErrorCode,
 "1.3.6.1.4.1.562.3.3.7.5.0",  "OctetString", $CurrentAlarmComponentId,
 "1.3.6.1.4.1.562.3.3.7.6.0",  "OctetString",
$CurrentAlarmComponentAddress,
 "1.3.6.1.4.1.562.3.3.7.7.0",  "OctetString",
$CurrentAlarmDescriptiveText,
 "1.3.6.1.4.1.562.3.3.7.8.0",  "OctetString", $CurrentAlarmOperatorData,
 "1.3.6.1.4.1.562.3.3.7.9.0",  "OctetString", $CurrentAlarmExpertData,
 "1.3.6.1.4.1.562.3.3.7.10.0", "OctetString", $CurrentAlarmCounts
 );
        */
      }
   }

   rule forward_infos {

      if ($CurrentAlarmSeverity=info ) {
         send( OtmOpenAlarm5ToNMS,
            "1.3.6.1.4.1.562.50.1.2.1.0",   "Integer",
$CurrentAlarmSeqNum,          // SeqNumber
            "1.3.6.1.4.1.562.50.1.2.2.0",   "OctetString",
$CurrentAlarmTime,            // DateAndTime
            "1.3.6.1.4.1.562.50.1.2.3.0",   "Integer",
$CurrentAlarmSeverity,        // Severity
            //"1.3.6.1.4.1.562.50.1.2.4.0", "Integer",
$CurrentAlarmNameSpace,       / not defined
            "1.3.6.1.4.1.562.50.1.2.5.0",   "OctetString",
$CurrentAlarmErrorCode,       // Type
            //"1.3.6.1.4.1.562.50.1.2.6.0", "OctetString",
$CurrentAlarmSite,            / not defined
            "1.3.6.1.4.1.562.50.1.2.7.0",   "OctetString",
$CurrentAlarmComponentAddress,//System
```

```
            "1.3.6.1.4.1.562.50.1.2.8.0",   "OctetString",
$CurrentAlarmComponentId,     // SystemComponent
            "1.3.6.1.4.1.562.50.1.2.9.0",   "OctetString",
$CurrentTrapSource,           // OriginatingAgent
            "1.3.6.1.4.1.562.50.1.2.12.0",  "OctetString",
$CurrentAlarmDescriptiveText, // ProblemIsolationData1
            "1.3.6.1.4.1.562.50.1.2.13.0",  "OctetString",
$CurrentAlarmOperatorData,    // ProblemIsolationData2
            "1.3.6.1.4.1.562.50.1.2.14.0",  "OctetString",
$CurrentAlarmExpertData       // ProblemIsolationData3
         );
      }
   }

   rule forward_minors {
      if ($CurrentAlarmSeverity=minor ) {
         send( OtmOpenAlarm3ToNMS,
            "1.3.6.1.4.1.562.50.1.2.1.0",   "Integer",
$CurrentAlarmSeqNum,           // SeqNumber
            "1.3.6.1.4.1.562.50.1.2.2.0",   "OctetString",
$CurrentAlarmTime,             // DateAndTime
            "1.3.6.1.4.1.562.50.1.2.3.0",   "Integer",
$CurrentAlarmSeverity,         // Severity
            //"1.3.6.1.4.1.562.50.1.2.4.0", "Integer",
$CurrentAlarmNameSpace,        / not defined
            "1.3.6.1.4.1.562.50.1.2.5.0",   "OctetString",
$CurrentAlarmErrorCode,        // Type
            //"1.3.6.1.4.1.562.50.1.2.6.0", "OctetString",
$CurrentAlarmSite,             / not defined
            "1.3.6.1.4.1.562.50.1.2.7.0",   "OctetString",
$CurrentAlarmComponentAddress, //System
            "1.3.6.1.4.1.562.50.1.2.8.0",   "OctetString",
$CurrentAlarmComponentId,      // SystemComponent
            "1.3.6.1.4.1.562.50.1.2.9.0",   "OctetString",
$CurrentTrapSource,            // OriginatingAgent
            "1.3.6.1.4.1.562.50.1.2.12.0",  "OctetString",
$CurrentAlarmDescriptiveText,  // ProblemIsolationData1
            "1.3.6.1.4.1.562.50.1.2.13.0",  "OctetString",
$CurrentAlarmOperatorData,     // ProblemIsolationData2
```

```
            "1.3.6.1.4.1.562.50.1.2.14.0",  "OctetString",
$CurrentAlarmExpertData        // ProblemIsolationData3
          );
      }
   }

   rule forward_majors {
      if ($CurrentAlarmSeverity=major ) {
         send( OtmOpenAlarm2ToNMS,
            "1.3.6.1.4.1.562.50.1.2.1.0",  "Integer",
$CurrentAlarmSeqNum,           // SeqNumber
     "1.3.6.1.4.1.562.50.1.2.2.0", "OctetString", $CurrentAlarmTime,
// DateAndTime
            "1.3.6.1.4.1.562.50.1.2.3.0",  "Integer",
$CurrentAlarmSeverity,         // Severity
            //"1.3.6.1.4.1.562.50.1.2.4.0",  "Integer",
$CurrentAlarmNameSpace,     / not defined
            "1.3.6.1.4.1.562.50.1.2.5.0",  "OctetString",
$CurrentAlarmErrorCode,        // Type
            //"1.3.6.1.4.1.562.50.1.2.6.0",  "OctetString",
$CurrentAlarmSite,           / not defined
            "1.3.6.1.4.1.562.50.1.2.7.0",  "OctetString",
$CurrentAlarmComponentAddress,//System
            "1.3.6.1.4.1.562.50.1.2.8.0",  "OctetString",
$CurrentAlarmComponentId,      // SystemComponent
            "1.3.6.1.4.1.562.50.1.2.9.0",  "OctetString",
$CurrentTrapSource,            // OriginatingAgent
            "1.3.6.1.4.1.562.50.1.2.12.0", "OctetString",
$CurrentAlarmDescriptiveText, // ProblemIsolationData1
            "1.3.6.1.4.1.562.50.1.2.13.0", "OctetString",
$CurrentAlarmOperatorData,    // ProblemIsolationData2
            "1.3.6.1.4.1.562.50.1.2.14.0", "OctetString",
$CurrentAlarmExpertData        // ProblemIsolationData3
          );
      }
   }

   rule forward_criticals {
      if ($CurrentAlarmSeverity=critical ) {
```

```
         send( OtmOpenAlarm1ToNMS,
            "1.3.6.1.4.1.562.50.1.2.1.0",  "Integer",
$CurrentAlarmSeqNum,          // SeqNumber
     "1.3.6.1.4.1.562.50.1.2.2.0", "OctetString", $CurrentAlarmTime,
// DateAndTime
            "1.3.6.1.4.1.562.50.1.2.3.0",  "Integer",
$CurrentAlarmSeverity,        // Severity
            //"1.3.6.1.4.1.562.50.1.2.4.0",  "Integer",
$CurrentAlarmNameSpace,     / not defined
            "1.3.6.1.4.1.562.50.1.2.5.0",  "OctetString",
$CurrentAlarmErrorCode,       // Type
            //"1.3.6.1.4.1.562.50.1.2.6.0",  "OctetString",
$CurrentAlarmSite,          / not defined
            "1.3.6.1.4.1.562.50.1.2.7.0",  "OctetString",
$CurrentAlarmComponentAddress,//System
            "1.3.6.1.4.1.562.50.1.2.8.0",  "OctetString",
$CurrentAlarmComponentId,     // SystemComponent
            "1.3.6.1.4.1.562.50.1.2.9.0",  "OctetString",
$CurrentTrapSource,           // OriginatingAgent
            "1.3.6.1.4.1.562.50.1.2.12.0", "OctetString",
$CurrentAlarmDescriptiveText, // ProblemIsolationData1
            "1.3.6.1.4.1.562.50.1.2.13.0", "OctetString",
$CurrentAlarmOperatorData,    // ProblemIsolationData2
            "1.3.6.1.4.1.562.50.1.2.14.0", "OctetString",
$CurrentAlarmExpertData       // ProblemIsolationData3
          );
      }
   }

   /* This rule looks for and counts a specific M1 event type */
   rule check_specific_event {
      if ($CurrentTrapDevice="Meridian1" and
$CurrentAlarmErrorCode="BUG3456") {
         send(con,bug3456,") Found ",$CurrentAlarmErrorCode," at
",$CurrentAlarmTime);
            bug3456:=bug3456+1;
      }
   }
}
```

Optivity Telephony Manager

Alarm Management

User Guide

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Publication number: P0910103
Document release: Standard 1.0
Date: July 2000
Printed in the United States of America

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